FRED JOHN HADDEN.

CHAS. S. HADDEN.

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"PIONEERS OF THE PLANTING ENTERPRISE IN CEYLON."*

(Second Series.)

CHARLES S., & FREDERICK J., HADDEN:

PIONEER PLANTERS AND PROPRIETORS, FROM 1840 ONWARDS.

IF any of the early estate proprietors deserve to be commemorated among the Pioneers of the Ceylon Planting Industry, they are certainly the two gentlemen whose names stand at the head of our page on this occasion. Coming out as very young men, the Messrs. Hadden (cousins) brought capital as well as energy and intelligence to the work before them. They did not spare themselves in the roughing which appertained to the life of the pioneer in those very early days, and nearly 58 years have elapsed since they landed at Colombo, they being among the very first to travel out to Ceylon by the so-called "overland" route. Mr. Frederick Hadden is no longer with us though well represented in the Island by his sons. Mr. Charles S. Hadden—who, we are glad to say still survives with plenty of life and energy to devote to the duties of the country squire in England,—was only 20 years of age when he landed at Colombo, and he is now in his 79th year, having been born on X'mas Day 1819, the same year though seven months after Her Most Gracious Majesty the Queen.

Let us now turn to the narrative of their trip out to, and early days in Ceylon:—Frederick Hadden and Charles Stanton Hadden (cousins) left London together for Ceylon in August, 1840, travelling through France to Marseilles, by French Steamer to Alexandria, by Nile boat to Cairo, to Suez on donkeys and to Bombay in the E. I. Coy.'s Gunboat "Zenobia." From Suez to Aden and Bombay a terrible voyage it was in this wretched old paddle steamer of 300 tons. The officers on board were allowed to receive £50 from each passenger and provide bed and board (7 passengers only). The steamer was said to have been employed in conveying pigs and cattle from Ireland to Liverpool before she was purchased by the East India Co. for a gunboat. *Rats swarmed* on board of her. When the "Zenobia" steam gunboat made Bombay, the food on board was almost exhausted, there were a few fowls left alive in the coops which were under the seats round the quarter-deck, not more than five or six remained, and *not one* of them had all the toes remaining, for they had been eaten off by the rats, which attacked them in the night! Mr. Hadden has often feared to relate this (though it is positively *true*) since many think it to be a bit of romancing. The machinery broke down twice on the voyage to Bombay which occupied three weeks. Four of the European crew were kept in irons on the quarter-deck all the time, and two officers were under arrest in their cabins. Our pioneers remained six weeks in Bombay with Mr. Alexander Hadden, a brother of Mr. C. Hadden and then on to Colombo on board the good old teak-built sailing ship "Recovery." The young gentlemen landed at Colombo on 1st or 2nd November, 1840; they had letters of introduction to the Hon. Geo. Turnour, then acting Colonial Secretary. He advised the Messrs. Hadden to buy land in the Ambagamuwa

*We have to apologise for interruptions in the monthly publication of our series of "Pioneers" caused by extra work in "bookmaking" in other directions. During the rest of 1898 we hope to continue the series at bi-monthly intervals, and among the Pioneers whose portraits and memoirs, or notices, are being arranged for are the Messrs. Frank and Wm. Sabonadiere, Mr. John Capper, Mr. C. Tottenham and Mr. Wm. Bowden Smith, all of whom had to do with the development o the Colony in diverse ways, and are fairly entitled to be enrolled among our pioneers.—ED. "*T. A.*"

District, because all the Government Civil Servants had secured land there, and the first of the new roads to be opened would be the one from Gampola to Yatiantotte through Ambegamuwa village. Mr. Wm. Hall, surveyor, had just cut the boundaries of a block of forest, of over 1000 acres, and offered to hand over his claim to them on receiving 1s. per acre commission. The Messrs. Hadden accepted this offer, and, as at that time it was considered dishonorable to bid at the auction against any one who had been at the expense of cutting boundaries, they obtained this land at the upset price of 5s. per acre. They at once set to work to cultivate it, and a very rough time they had of it; the land was situated beyond Carolina Estate towards Adam's Peak; there was not even a bridle-road to it beyond Gampola, and all supplies and rice for coolies had to be carried over 30 miles of jungle road, at that time one of the worst in Ceylon. After working hard for twelve months (which was well earned experience) the Messrs. Hadden wisely and fortunately concluded that Ambegamuwa was the worst district in Ceylon for coffee, and so they decided to abandon the place although they had spent £1,500 upon it: a serious loss out of the available capital, for money was not so plentiful it those old days. Luckily a small estate "Algooltenne," (or "Weygalla" as the Messrs. Hadden preferred to call it) was advertized for sale in the *Observer*, of the extent of about 230 acres, only 30 acres planted with coffee, adjoining Mr. Tindal's fine property under Hunasgeriya Peak, at that time managed by Mr. Austin. Having occasionally visited that gentleman, and being much impressed with the Hunasgeriya fine soil, and the splendid young coffee plants growing there, the Messrs. Hadden resolved to purchase Weygalla, and this Mr. C. S. Hadden always considered, turned out to be the best paying estate in Ceylon.

From the day of their entrance into Hunasgeriya district, the success of the Messrs. Hadden was secured. By the spring of 1845 the crops from Weygalla (the first sold for 124s per cwt) had returned to the Messrs. Hadden every penny of capital they had spent since leaving London. We have heard that their neighbours in Ambagamuwa called the young Pioneers, "a couple of fools" at the time they abandoned that district; but the majority of those, they left behind, came to ruin, several were proclaimed bankrupt, and so the Messrs. Hadden might then have asked "Who were the fools"?

On the 30th June, 1845, a fine block of forest land was sold by auction in Colombo situated on the Hunasgeriya range, only three miles from Weygalla, belonging to Mr. Fraser of Arbuthnot & Co., Madras. It was divided into four lots of about 250 acres each. The cousins examined this land thoroughly, and thought it such fine old forest with splendid soil, that they resolved to attend the auction, and bid for the best three lots. These were knocked down to them at £5 per acre, a price at that time considered enormous, as good forest was still to be bought at 5s per acre! But the Messrs. Hadden knew the value of the land, and at once opened three new Coffee Estates of 200 acres each, called "Hunugalla," "Halgalla," and "Horogalla," all of which returned a profit to their fortunate owners, year by year, for *forty years*.

Mr. Frederick Hadden left Ceylon for good in 1850, and Mr. C. S. Hadden in 1852, by which time all stores and buildings were completed, leaving Mr. Peter Moir in charge of all the properties* with his brother Mr. James Moir to assist him. Two more sensible, honest, and hard-working Scotchmen never landed in Ceylon. Under their charge the estates continued to flourish until the Coffee became unable to fight such dire enemies as "Leaf disease" "and Green Bug."

The land abandoned in Ambagamuwa was never revisited by either of the Messrs. Hadden after the day they gave it up; but it was divided into five lots by Mr. James F. Moir and put up to auction in Colombo on 30th Sept., 1874, at 1 p.m. On that day Mr. C. S. Hadden was out partridge shooting on his property in Herts, and remarked to a friend while taking luncheon under a hedge, that he had a property selling about that time in Ceylon, and expected to receive a telegram giving the result. On the morrow on returning home from shooting at 4 o'clock, the telegram was already on his table saying that all the lots were sold at a price which returned all the capital they had expended on the place. Benachie and surrounding estates in Lower Dikoya were formed out of this group of lots. Had they at once been put in tea, as we among others urged at the time, their owners would have scored; but most of the land went into coffee and did not pay for years until tea took its place.

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* The late Mr. Tytler was fond of telling the story of Peter Moir's selection as their responsible Manager by the Messrs. Hadden. How he (P.M.) and some other young men came out for an employer whose engagement was far from a fair one considering the times, and moreover as signed in London, it was not binding in Ceylon—and so two of the young men broke through it in a few months and speedily got employment at double the salary. Peter Moir no more considered he was fairly dealt with than the others; but he had signed his agreement, pledged his word, and no power on earth would make him break it. He was called a "softie," a "spoon," &c., until on the very day of his agreement expiring, he had the offer from Mr. Chas. Hadden, of a post and salary that placed him far before his old companions (who never greatly prospered we believe), while he had established for himself the most valuable thing in the world, a CHARACTER which made him esteemed beyond most men right through the Colony, and which he never forfeited till the day of his death in the old country. Succeeding generations of planters came to hear of Peter Moir as the man whose word was as good as his bond.

Kotiyagalla in Bogawantalawa was purchased for the Messrs. Hadden by Mr. Moir in the year 1872. It was never a great success in coffee, or at any rate never approached the Hunasgeriya Estates; but it did, and is doing, well in tea. Mr. Fred. Hadden, senr., died on 22nd April, 1882, thus terminating a partnership made with his cousin in 1840, during the whole of which time they remained on the most affectionate terms. Soon after, it was arranged that Messrs. Fred. & Frank J. Hadden, sons of Mr. F. Hadden, senr., should become sole proprietors of the Hunasgeriya Estates, and that Mr. C. S. Hadden should become sole owner of the fine Kotiyagalla property, of which his nephew and son-in-law Mr. Frederick Hadden became chief manager. Kotiyagalla contains 1,080 acres of rich land, about three-fourths of which are under fine tea, the jat, climate and soil being all conducive to a fine high-priced product. Later on Mr. Frank J. Hadden became sole proprietor of Hunugalla and Weygalla and, lately, he sold the latter with 344 acres to Mr. E. G. Beilby, retaining Hunugalla—770 acres with 400 doing well in tea—in his own hands.

We ought to mention, too, the close business connection between the Messrs. Hadden ~~& Co~~. and the well-known Fenchurch Street Firm, Messrs. James A. Hadden & Co., of which their relative Mr. Alex. Brooke is the esteemed managing partner.

We may here give "a leaf from the past" kindly supplied to us without Mr. Hadden's knowledge by one well-acquainted with his family in the early days:—"I know not if you realise how Mr. Chas. S. Hadden links us with the eighteenth century. His father took an active part against the rioting then so rife and his commission dating back to the time when Kings of England still claimed to be Kings of France, is so signed by George III. That nonsense was not dropped until the Union with Ireland in 1801. There are not many now alive whose father's commissions were signed by a King of England, of Scotland, and of France!

"The old yeomanry officer had the freedom of Nottingham conferred on him in 1795. See enclosed cutting from a Nottingham journal. The Colonel Seely there is son of 'Seely's pigs' if you are old enough to remember them: The writer of the letter, Fellows, is author of a History of Nottingham Yeomanry Cavalry."

THE FREEDOM OF THE TOWN.

TO THE EDITOR OF THE NOTTINGHAM DAILY GUARDIAN.

Sir,—I notice in your paper of to-day, in the report of Mr. McCrath's speech in the Council respecting the honour that is to be conferred on Col. Seely in reference to the freedom of the town, that he says the honour "would be increased to those who followed after by the fact that the first name on the list would be that of Mr. Seely himself." In the "Nottingham Date-book," 1st September, 1795, it recorded that the commissioned officers of the 12th Regiment of Light Dragoons—Lieut. Middlesmore and Cornet Hadden, of the Yeomanry Cavalry—were presented by the Corporation with the freedom of the town, as an acknowledgment of their meritorious exertions in quelling riots. It would appear, therefore, that conferring the freedom of the town by the Corporation is not unprecedented.—I am sir, &c., GEORGE FELLOWS.

Beeston Fields, Nottingham, May 7th, 1895.

In conclusion we heartily congratulate one of the earliest, most intelligent and persevering of the Planting Pioneers of Ceylon on his long and honorable connection with the Colony. We have given but the briefest outline of the actual jungle work of Messrs. Fredk. and C. S. Hadden. It will be observed that they stuck to their posts all through the financial crash of 1845-47 when coffee and Ceylon were supposed to be ruined. The senior Mr. F. Hadden, now deceased, gave ten years' continuous hard work to the development of the plantations before ever taking a holiday; while Mr. C. S. Hadden had twelve years for his share. No one of recent years can picture what life and work in the hill-country of Ceylon was like in the "Forties," and more especially what roughing in the wilds of Ambegamuwa—in one of the very wettest divisions in the island—was like in 1841-2. We remember hearing our late senior describe a visit he paid to Mr. Wm. Hall (the same who sold his interest to Messrs. Hadden) in Ambegamuwa in 1841, and how the rain got through their talipot hut, filled up their boots and gave him a cold which it took years to get rid of altogether! Scant supplies, there being no roads, and bridges and streams often unfordable, were recognised as a matter of course, while even the sun was rare visitor between May and December:—

Past five an' fifty busy years,
An' lo! the wondrous change;
Those Hills are now the white men's homes,
Which were the wild beasts' range.
And, mixing with the torrent's roar,
The steam-pipe's puff is heard;
While rattling round the *roller* goes,
As merry as a bird.

And few and scant their comforts were—
The leaders of that band—
Whose cosie cottages now rise,
Bright homesteads o'er the land;
So while for all that's still to do,
Ye strive with high resolve—
Let grateful thoughts, too, have their play
As ye THE PAST revolve.

All honour then to the men who laid the foundations of the prosperity of Ceylon as a plantation Colony. Very, very few are left to us who go back beyond the half-century in their experience, and among these none takes a more honorable position than the Messrs. Hadden who brought youth, intelligence, indefatigable energy and capital to their work in Ceylon; while more especially would we

offer our congratulations to Mr. Chas. S. Hadden whom we have known and esteemed since he began revisiting his properties here—so well-managed by his nephews—some twenty years ago. The very type and *beau-ideal* of country squire, of "a fine old English gentleman, all of the olden time," it is a credit to Ceylon that she can number among her early Planting Pioneers, one so hale and hearty as

CHARLES S. HADDEN OF KOTYAGALLA, BOGAWANTALAWA, CEYLON; AND OF INGLESIDE, SUNNINGDALE, BERKS, ENGLAND.

Long may he survive for us to point to as one of the very first band of Proprietary Planters who nvaded the Kandyan jungles in the early "forties," and who have made Ceylon what she is today; and long may the name of "HADDEN" through younger generations, continue to be honorably enrolled in the Proprietary and Managing lists of our Ceylon plantations.

TIMBER TREES OF THE SEYCHELLES ISLANDS.

REMARKS AND USES OF TIMBER.

Sideroxylon Species. "Capucin." A large growing tree. Timber hard, almost undestructible either in water or in the atmosphere, used for beams, wall plates, frames of wooden houses, verandah posts, piles, planks, shingles, spokes for wheels, &c.

Calophyllum inophyllum. "Takamaka" or "Tacamahaca.' A large growing shady tree always found on the seashore. Trunk 4 feet in diameter. Timber tough, coarse grained, not easily worked, color reddish, used for boards, planks, beams, ship and boat building, masts. Cocoa-nut mills are dug out of the root end of the tree and excellent canoes "Pirogues" are made (hollowed) out of it. The exudation from the stem is the *Tacamahaca* resin of Commerce. Its seeds yield the bitter oil of India which is said to be worth £90 per ton. This oil has a great reputation in Polynesia and the East Indies as a liniment for rheumatisms, pains in the joints, and bruises, and its efficacy in these respects can hardly be exaggerated. The uses of the oil and resin are unknown in Seychelles.

Dipterocarpeae Species. "Bois de fer." This is a large lofty growing tree, often attaining a height of over 100 feet, with a trunk 40 to 70 feet to the first branch, and a diameter of from 4 to 6 feet. Has great repute for making canoes. Timber resembles Teak in color and grain, hard and durable, used in all parts of house-bulding, boats, &c. This is perhaps the most useful timber of the Seychelles Islands, for general purposes. When the tree is wounded there exudes an almost transparent resin which is exceedingly flammable, and was formerly used as incense.

Afzelia bejuga "Gayac" or "Faux Gayac." Yields a very fine strong and durable timber. In color it is not unlike the last and is used for the same purposes. It is now very scarce, and few living trees exceed 8 inches in diameter.

Terminalia Badamia "Badamier." A large growing tree from which canoes are frequently made. Timber is generally used for boarding inside of houses, &c, will not bear wet and exposure to the atmosphere.

Imbricaria petiolaris. "Bois de Natte." A large and lofty growing tree, Trunk often attaining a height of 50 feet. It is now becoming very scarce. Timber used in all parts of house building, cabinet work, &c. It is dark colored, close and fine grained, hard and durable. It makes beautiful furniture and when well polished it almost rivals the finest Mahogany.

Gomphrandra species. "Bois Maree." A middling sized tree, whose wood is used for boards and planks in house-building. The timber is of a dirty white color, and not very durable.

Wormia ferrugenia. "Bois Rouge" Is an ordinary sized tree, Timber red colored, hard and durable, bears exposure well and is in great repute for flooring and roofing houses.

Heriteria littoralis. "Bois de Table." A large growing tree, not common. Timber used in house building, furniture, &c. It is close grained and dark colored, and its quality is excellent.

Rubiaceæ Species. "Bois Sandal" or "Saudal." A small tree, Trunk seldom exceeds a foot in diameter and 20 feet in height. Wood close grained, easily worked, polishes well, beautiful pale yellow color, used for ornamental work in the inside of houses, furniture, panelling, and occasionally boards, &c.

Campanosnermum Zeylanieum "Bois Montagne."—Occasionally attains large dimensions. Held in great repute for making canoes which are said to be very durable. Timber used in house, ship and boat building &c.

Casuarina Equisitifolia. "Filao" or "Cedre" In Seychelles this tree attains a gigantic size. In 1871 I saw one whose trunk was 150 feet in length and 6 feet in diameter at about 20 feet from the root, lying on the beach near St. Anne's Bay, Praslin. In 1874, I saw several trees of it, growing on the beach at Curieuse Bay, Praslin. that were 120 feet in height, and straight as arrows. They appeared to be comparatively young trees. Its timber is used in all parts of house building. It is close grained, and sinks in water when it is green. When kept dry it is very durable, but decays quickly when exposed to moisture. It is nearly impossible to draw nails out of it. It makes excellent firewood and burns freely even when green. It is indigenous to these Islands and grows readily from seed which may fall on cleared ground.—J. HORNE, *Sub-Director*.

CINNAMOMUM TAMALA.

The Director of the Department of Land Records and Agriculture in Assam on the 22nd April 1895 forwarded some specimens of Tej-pat leaves for identification. In the letter accompanying the sample it was said that the tree yielding the leaves was largely grown in the Jaintia district for the sake of the leaves which were used as condiment. The leaves belonged to Cinnamomum Tamala, and on their being referred to Dr. Prain of the Royal Botanic Garden, Sibpur, he pronounced them to be those of the variety intermedium.

The use of Cinnamon leaves in India has been known for centuries. At one time, as Folia Malabathri or Folia Indi, the leaves of certain Indian species of Cinnamomum were employed in European medicine, but now they have become obsolete.

The information we posses on the subject of Tej-pat as recorded in works on materia medica is very fragmentary, but the discovery of a large trade in this drug in Assam has enabled us to bring together all the recent facts in connection with the industry. On the receipt of the letter from the Director, Land Records and Agriculture, Assam, a set of questions was drawn up by the Reporter enquiring into the extent of the cultivation and commerce of the leaves. The replies to these questions sent in by the Director and other officials in Assam have assisted very materially in the compilation of a fairly complete *Agricultural Ledger* on the subject.

Botanical Origin.—Tej-pat is obtained principally from Cinnamomum Tamala, *Fr. Nees*, and its variety intermedium. The leaves under this name have also been derived from C. albiflorum, *Nees* (in the Lahore bazars), C. obtusifolium, *Nees*, and C. impressinervium *Meissn* (in Sikkim), and the wild species C. zeylanicum. *Breyn*. The Tej-pat from wild trees found in Mysore and referred to in the *Pharmacographia* would probably belong to the last named plant. Roxburgh alludes in his *Flora Indica* to Tej-pat leaves as those of Laurus Cassia, a name which is now synonymous with C. Tamala. It has been stated by some writers that the leaves of any species of cinnamon are indiscriminately referred to as Tej-pat by the Natives.

Vernacular.—The drug is called *Tamali* in the *Raja Nirghanta* and this is probably the origin of the specific

name of the plant. *Tej-pat*, or, as it is also written, *Tidi-pat* and *Tez-pat*, is derived from *Tvach* or *Twachá*, the Sanskrit equivalent for cinnamon bark, and *pat*, the leaf. *Dalchini* (Chinese bark) and *Taj* are Hindu names applied to any kind of cinnamon bark. The *Taleef Shereef* gives *Tudje* and *Putrudi* as other vernacular names. The leaves are the *Sazaj-i-Hindi* of Indian Mohammedans. In Kashmir the leaves are called *Barg-i-Taj* and in South India *Tamal patra* and *Talisha-pattiri*. From Assam we are informed that the cinnamon tree is called *Dieng Latyrpat* and the leaves *Latyrpat*.

Habitat.—Cinnamomum Tamala is wild in tropical and sub-tropical Himalaya, from near the Indus to Bhutan, at altitudes of 3,000-5,000 feet, ascending to 7,800 feet in Sikkim, and in Sylhet and the Khasia mountains to 3,000-4,000 feet. Gamble says it grows in the valleys of the Mahanadi and Tista, but it is not found much on the West of the Mahanadi. The tree is cultivated in Assam.

Cultivation.—In the Khasi and Jaintia Hills about six squaremiles are planted with Cinnamomum Tamala. Owing to the trees being grown amongst jack, betel-nut palms, and other fruit trees, the exact amount cannot be ascertained, but it is calculated that 400 acres are planted up in the Jaintia *parganas* and a small quantity in the submontane tracts, such as the Cherrapunji Hills in the north of the Sylhet district. The trees delight in a heavy rainfall. Continuous rain is said to be unfavourable for their cultivation, but heavy rainfall followed by bright sunshine is most congenial. Storms effect considerable damage by breaking off the leafy branches. It is also conjectured that excessive moisture diminishes the odour of the leaves. In the Khasi and Jaintia Hills the trees are grown in regular plantations 7 feet apart; the seedlings are raised in beds, and planted out permanently when the plants are five years of age. The tree takes five or six years to grow, or comes into bearing at ten years, and continues to bear for one hundred years. The cultivation is in the hands of the hillmen.

In Sylhet the trees are self-sown; the ripe seeds fall from the trees into the soil and germinate. When the plants are about a foot high they are transplanted. Great care is bestowed upon the plants when they are young and tender. As constant exposure to the sun would kill the shoots they are planted behind bushes or trees for protection. The undergrowth is kept down twice a year in the plantations for the first eight or nine years of the plant's life after that the jungle is cleared once a year in April. In some plantations the soil is dressed, but in most districts the soil is never manured or irrigated.

No reserve areas are kept for the growth of these trees. The Tej-pat and cinnamon trees are different. The former are only used for their leaves and no bark, or only a small quantity is collected in the Khasi Hills. A small quantity is sent to Sylhet from Sibsagar and Lakhimpur by the Nagas.

Collection and Crop.—Tej-pat is plucked in dry and mild weather from October to December, and in some places the collecting is continued to the month of March. The leaves are taken once a year from young trees, and every other year from old and weak ones. On an average 15 seers may be obtained from one tree, but the quantity depends upon circumstances; a tree yields from 10 to 25 seers of leaves in a year. The average yield of leaf per acre in the Jaintia parganas is about 30 seers without, and 2 maunds with, twigs. The whole of crop from four hundred acres was worth last year as much as R1,100. The quantity of leaves from the Sylhet district last year calculated on the turn-over of the traders was estimated at 14,470 maunds, and from the Jaintia district 20,000 maunds.

In harvesting the Tej-pat the small branches are cut down with the leaves and dried in the sun for three or four days. The leafy branches are then tied up into convenient bundles ready for the market. In the other case, the leaves are separated from the branches and packed in bamboo nets of a cylindrical shape called *Bora* or *Jungra* which are four feet long by two feet in diameter. The packages are carried down the ghaut roads of the hills by coolies to Sylhet.

Disease.—The young trees are not usually attacked by insects, but the old ones are sometimes destroyed by white ants. The leaves are subject to a disease called *Guti* (small pox). When attacked with this malady the leaves are spotted with black eruptions about one-eighth of an inch in diameter. Spots like these are often seen on mango leaves. Leaves injured in this manner are not plucked for sale.

Description of Tej-pat.—This is how Tej-pat is described in the *Taleef Shereef*. A very common leaf in length from 3 to 5 inches and the breadth 2 inches, of a green colour and pleasant smell; it is strongly marked by veins. It is brought from the hills. The author of *Makhzan* describes them as yellowish, coriaceous, ovate-lanceolate leaves with five nerves extending from base to apex, and says they are produced from a large tree growing in the mountains of Sylhet. The most careful description of Tej-pat is that of the *Pharmacographia Indica*. The leaves vary in size, the largest are 6 inches or more in length and 1½ inch broad, oblong, obtuse-pointed, entire, with three principal nerves and two smaller ones which are quite marginal; the venation between these nerves, which run from base to apex of the leaf is finely reticulated, and the leaves are of an olive-green colour; the upper surface is polished. They have a pleasant odour like a mixture of cloves and cinnamon.

Uses.—Tej-pat partakes of the aroma, pungency and probably carminative properties of cinnamon bark, and is largely used as a spice in various culinary operations. According to Dr. Aitchison the leaves are used in Kashmir as a substitute for betel-leaf or *pan* (Piper Betle, *Linn.*) and Dr. Lisboa speaks of their being employed in the preparation of curries in the Bombay Presidency. *Pan* and various curry leaves have to be used in a fresh condition on account of the fugitive nature of their aromatic principles, but Tej-pat possesses a distinct advantage over other leaves in retaining its volatile oil for a considerable time after being plucked and dried. As a matter of fact, cinnamon leaves in India take the place of the domestic flavouring agent in England known as Bay leaves (Laurus nobilis).

In the *Taleef Shereef* or Indian Materia Medica (translated by Dr. George Playfair, 1833) the medicinal properties of Tej-pat are described as being hot and light and cardiac, useful in wind, piles, nausea, pain in the stomach and flatulence. The author of the *Makhzan* considers the drug to be carminative, stimulant, diuretic, diaphoretic, lactagogue and deobstruent. In the *Raja Nirghanta* it is mentioned as a remedy for the expulsion of phlegmatic and rheumatic humours and is prescribed in cases of flatulence and dyspepsia. Besides being used directly in medicine, the leaves are employed as adjuncts to other drugs to render their exhibition less nauseous.

The third use is that of a dye. In the North-West Provinces Tej-pat is mixed with myrobolans and employed in calico printing and apparently acts as a clarifier. The bark and leaves of the Taj are used in Chutia Nagpur as an auxiliary with *Kamela* (Mallotus philippinensis) as a dye.

Chemical Composition.—Kurz in his "*Forest Flora of British Burma*" made a very suggestive statement, when, in describing Cinnamomum zeylanicum, he said, "The leaves yield oil of cloves." The cloves are obtained from quite a different plant (Eugenia caryophyllata, *Thun.*), but it is a remarkable fact that the prevailing constituent of the oil is identical with that found in cinnamon leaves. The oil of the leaf was first described by Kampfer in 1712. Dr. Stenhouse in 1854 found it to have a specific gravity of 1·053 and to consist of almost pure eugenol with a little terpene and cinnamic aldehyde. Professor E. Schmidt, Berlin, confirmed the result of this analysis in 1891, and further showed that the oil of cinnamon root contained eugenol and terpene, and the oil of the bark cinnamic aldehyde and terpene. The oils of cinnamon leaf and cloves are, therefore, remarkably similar in consisting of a large proportion of a chemical body known as eugenol or eugenic acid,

Commerce.—A small quantity of Tej-pat is consumed locally, but the bulk of it is exported to Naraingan], Dacca and other places in Bengal. The Khasias usually sell the leaves in Sylhet to Bengal merchants who send the leaves to a large extent to Calcutta. The price of the leaves is 8 to 10 annas per maund with branches, 14 annas with twigs, and R1-4 to R1-6 cleaned.

Tej-pat is largely imported from Nepal and the forests of the North-West Provinces. About 33 tons of leaves and 24 tons of bark are annually exported from the tract between the Ramaganga and Sarda rivers of the Kumaun district. Gamble notices the collection and sale of the leaves in Sikkim.

The following table shows the return of the sales of Tej-part from three districts in the North-West Provinces about twenty years ago:—

	1874-75.		1875-76.	
Bijnor . .	$36\frac{1}{2}$ cwts.	R 62	$18\frac{1}{2}$ cwts.	R 76
Garhwal . .	$14\frac{3}{4}$,,	,, 30	35 ,,	,, 37
Kumaun . .	$88\frac{1}{2}$,,	,, 272	$120\frac{3}{4}$,,	,, 374

TEA EXTENSION IN CEYLON.

NEW FACTORIES TO BE BUILT IN 1898.

Messrs. Brown and Co., the well-known engineers at present have their hands very full executing a number of big orders for factories that have been entrusted to their Nawalapitiya branch. They have something like a dozen new factories in hand for this branch alone, and the manager, Mr. Geo. Brown, having to supervise all the works, is now kept cotinually on the move. A week ago he was away in the Kelani Valley, while yesterday he was again in Colombo on his way back from Udugama, and to-day, he set out again for upcountry. The work that took him south was the erection of a factory at Udugama on the property owned by the Udugama Tea and Timber Company. Here they are now erecting a large new factory, and the building to be made in such a way as to be capable of extension; but at the outset the dimensions will be 100ft. by 40ft. with two floors above the ground floor. The factory is to be built with brick pillars and brick walls, with ironcross-beams and centre columns. The roof will be of wood. It is to be fitted up with a 40 horse-power turbine with a fall of 50 feet, and the installation will include steel-piping, 20 inches in diameter. The machinery at present employed in the two old factories hitherto used is to be re-erected in the new building, with several additions of new machinery of latest design. The work has been commenced, and the factory is to be completed in four months. This will place the Udugama factory much nearer to Galle and close to the main cart road. The Company has got extensive reserves of jungle, amounting to several thousand acres, and we have no doubt there is a good future before it, although up to now it has been working under difficulties, chiefly as regards manufacturing its crop. There is also being erected on Donside, near Nawalapitiya, a factory of which a feature will be the way the motor power is to be provided. Arrangements have been made to place the factory on the main cart-road, to facilitate transport, and the water-power (which is at a considerable distance from the factory) is to be availed of by means of wire-rope transmission. Detailed plans have been made and submitted for this work, and, no doubt, it will prove as great a success as it has already proved in other countries, although this system of water power transmission has not been hitherto largely employed either in England or Ceylon. We believe that this will be the largest wire-rope transmission of the kind in Ceylon. The work has been ordered by Mr. Hector and is already progressing. The new factory is also being constructed. It is being built so as to permit of extension at a later period, but at first will be 72 feet long by 35 feet wide. The building will be a two-storeyed one, and all the machinery it will contain will be new, as, there not having been a factory on the estate before, there is no old machinery to be utilised. The place will be of brick and iron, with an iron roof. The work has just commenced and is to be finished in four months.

TEMBILAGALLA.

A third new factory is goi g up on Tembilagalla, near Oolapane, the property of Messrs. George Christie and Haycock. It will be precisely similar to the factory just described as in progress on Donside, as far as relates to materials and accommodation, while water-power will also be used for this.

A NEW WITHERING HOUSE FOR SANQUHAR.

A new withering-house of unusual size is in progress on Sanquhar estate, near Gampola. This work has been in hand about two months, and is expected to be finished by the end of next month. The dimensions are 72 feet by 35 feet, and the building will carry two floors above the ground floor. It will be used entirely for withering, and will be an addition to the large factory that is at present in working.

DEVELOPMENTS ON GALATA.

A new turbine installation is being put in on Galata estate, near Gampola, on the other side of the river to Sanquhar. This work has been in progress three weeks and will be finished in a week's time. The horse power is 15 with 80 feet fall.

THE NEW FACTORY AT RATWATTE.

Messrs. Brown & Co. executed a very smart piece of work for the Ratwatte Tea and Cocoa Company. They were commissioned to put up a complete factory, and, by their contract, they had to do it in four months; but they did it in three. It is now in full working order, and everything is going on excellently. The motor power here is a 24 (brake) horse-power and a large locomotive multitubulor type of boiler. The new machinery supplied to the factory consists of one large down-draft improved sirocco; one 32 in. Rapid roller; one of Brown & Co.'s made-tea sifters; and one Breast roll breaker. This latter machine has been lately very much improved, and is reported to be doing excellent work. The dimensions of this factory are 50 feet by 40 feet at present; but extensions are likely to be made very soon. The factory, like the preceding ones described, is of two storeys, with iron roof, iron columns and cross pillars with brick walls. The rapidity with which this work was carried out (in a month under contract time) has excited much favourable comment.

A BIG WHEEL ON CRAIGHEAD.

The next work calling for description is one fully as interesting as any that we have already enumerated. For long, Craighead estate, in Dolosbagie, has relied on two 13 horse-power turbines; but lately there has been a large acreage opened on this estate, and additional machinery being, therefore, required, extra driving power had to be obtained. It was accordingly decided, on the advice of Messrs. Brown & Co.'s experts, to discontinue the old turbines and substitute therefore a big Pelton wheel. This has now been done, and Craighead now boasts the largest Pelton wheel in the Island. The wheel has been most satisfactorily introduced, and this despite the fact that it is working under a comparatively low fall. The following are the dimensions of the wheel:—diameter 72 inches, (weight $19\frac{1}{2}$ cwts. without shafting and other accessories); horse-power, $45\frac{1}{2}$; fall, 80 feet evolutions, 115 per minute. The water supply is 400 cubic ft. per minute. This wheel has been thoroughly tested, and has been in use long enough to show that the change is a beneficial one and the proprietor has assured the engineers that he is more than pleased with the results.

A NEW FACTORY AT RAXAWA.

There are two Raxawas in Ceylon, but the one at Dolosbage has been enterprising enough to order a new factory, and the site for it has just been cut. It will be of two storeys—dimensions 70 feet by 30 feet; and the contract stipulates that it is to be handed over in four months' time. We understand that the motor-power to be used is a Pelton

wheel, with a very large fall, namely, 500ft. The supply of water, however, is small and in consequence the effective horse-power is only to be 15; but we are informed that this will be quite suffioient for the requirements of the propeity. The machinery to be supplied will be all new, and of the latest and most approved types.

A PROJECTED FACTORY ON UDABAGE.

There is a scheme afoot for a large factory on Udabage estate, in the Kelani Valley. The motive-power is to be a 40 horse-power turbine; but as this work has not yet been put in hand, we are unable at the present moment to give further details; bnt we may say the factory will be a large one—about 100 ft. long by 40 ft. broad, and, like all the other factories here described, it will consist of a groundfloor and two upper floors.

The list we have given is probably an unprecedented one of work proceeding at one period; but it by no means exhausts the statement of operations Messrs. Brown & Co. are carrying out, for their Hatton branch has a good deal of work of a similar kind.

In addition Messrs. Finlay, Muir & Co. are putting up

A BIG FACTORY ON CHESTERFORD ESTATE,

in the Kelani Valley. This will be a noteworthy work, when it is completed. As our readers know, Messrs. Finlay, Muir & Co. employ their own engineer (Mr. W. Pottie), who supervis s their buildings the actnal work of erection being given to contractors, who work under the immediate direction of Messrs. Finlay, Muir & Company's superintendents. The new Chesterford factory is to be completed by the first week in February, and will be 150 ft. in length, and 40 ft. wide, with annexes. There will be a ground floor and two upper floors, and the structure will be an iron building with teak weather-boarding and window sashes all round. It will be a very fine building when completed, and great credit is due to the superintendent (Mr. Angus) for the speed with which the work has so far been carried out, and to Messrs. Walker, Sons & Co., who have furnished all the necessary iron-work in an incredibly short space of time. The factory will serve both Chesterford and Madooltenne, and is very central. Old Madooltenne factory adjoins it, and will be converted into a withering-house; while all the old machinery of the two factories will be re-laid in the new building, and will be supplemented by a new Paragon tea-dryer; one of Jackson's 32 inch Rapids; and one of Mickie's made-tea sifters. The power will be steam; and the engine one of Marshall & Sons' 12 horse power.

A HUGUE FACTORY AT CHETNOLE.

At Chetnole in Balangoda, the same firm are putting up, under the supervision of Mr. Clark, a new withering-house, 100 ft. long by 40 ft. wide—and, like the other buildings described, one of three floors. Moreover, the existing factory is to be extended, and a new turbine, with a fall of 150 ft., and capable of developing 40 horse-power, is to be installed. With the addition of a new withering-house, and the extension of the factory, the factory (which, by the way, serves also Meddakande estate) will be capable of turning out 600,000 lbs. of made-tea a year. The new building will be of stone and timber, with center pillars and cross-beams of iron, and a roof of corrugated iron. Plans are now being made, but the work is wanted quickly, and it is to be executed with all possible speed.

RASAGALLA'S NEW FACTORY

—a work also under the supervision of Mr. Pottie, and like the last, directly superintened by Mr. Clark, —is rising fast, and here again Messrs. Walker, Sons & Co. have shown great expedition in preparing the iron-work, for, though it was only ordered a month ago, it is now ready for despatch. For this work, however, there is no immediate hurry as far as regards completion as it is intended to finish Chetnole before this, and also before

THE NEW FACTORY AT HOPEWELL

is completed. This last-named building is being put up under the direct supervision of Mr. Wm. Taylor, and when finished it will be 200 ft. long by 65 ft. wide, and 40 ft. high—in a word, one of the largest factories in the island.

THE HAPUGASTENNE CART ROAD.

A different class of estate work, but an equally important one, is now in progress in the Ratnapura district, when a cart-road is being cut from Ratnapura to Hapugastenne. There will be about 17 miles of this road, which will ultimately be carried right on to Hopewell. The work has been begun from the Ratnapure end, and is in charge of Mr. A. J. Emery, the manager for the Hapugastenne estates. The Road is already cut, almost to the tenth mile.

AN AERIAL TRAMWAY IN TRAVANCORE.

Messrs. Finlay, Muir & Co., however, are not only busy in Ceylon, for we hear an important undertaking they are about to set on foot in Travancore, where they propose to construct an aerial tramway extending from the bottom of the ghaut at Bhodiniya-Koonoor to the Yallaka Gap—a distance of about six miles. When completed it will give Messrs. Finlay, Muir & Co., a second outlet from their land. We have frequently referred to the work going on to the West, where Mr. Benzie is engaged in making a cart-road which will place the property in direct communication with Cochin. That is steadily progressing, but the firm deemed it advisable to have an alternative outlet, and so they propose on the eastern side of their block to put up an aerial tramway, which will convey their produce eastward to a point on the main road whence it can easily be forwarded to Ammanaya Koonoor, the receiving railway station for goods intended for Madras. The tramway will begin at an elevation of 2,000 feet, and will reach an elevation of 6,000 feet, and will be over a trace surveyed originally and recommended by Messrs. Benzie, Mickie & Pottie. Our readers will see at once that it will allow Messes. Finlay, Muir & Co. to send produce down and to get rice up much more advantageously than they have hitherto been able to do. Tenders are to be invited for the work; and amongst those who have gone up to inspect the land and judge on the spot what is wanted is Mr. G. H. M. Hyde, of the Colombo Commercial Company, so that Company will possibly tender.—Local "Times"

British Guiana and Ceylon.—The *Times of India* says :—"Some time ago, in discussing the report of the West Indies Commission, we took occasion to compare the condition of British Guiana with that of Ceylon. We pointed out that both Guiana and Ceylon had, at a certain stage of their existence, suffered grave reverses owing to the failure of the respective industries upon which their prosperity depended; and we instituted comparisons regarding the subsequent policy pursued by the inhabitants of the two colonies, which did not altogether redound to the credit of the Guianese. A Guiana contemporary, the *Demerara Chronicle*, has published a reply to these criticisms, in which it points out that Ceylon, with its 3¼ million inhabitants, has infinitely better opportunities for development than has Guiana, which only possesses 300,000 people all told. The disparity in population means, it urges, 'a vast difference in the cost of labour, a far greater consumption of dutiable products, and a larger number of people to occupy lands newly opened-up.' Had it not been for the artificial increase induced by immigration from India, Guiana, says the Demerara journal, 'would have made hardly any advance upon the position held at the time of Emancipation.' At the same time, the general accuracy of our contention that the present depression would have been far less serious if the colonists of past generations had been less concentrated upon the sugar industry, and had tried to develop the other resources of the colony, is admitted."

WHAT WE EAT AND DRINK.

ADULTERATION AND NOMENCLATURE.

Dr. F. L. Teed, F.I.C., public analyst for Islington, in a report to the local vestry, issued yesterday, states that in one instance recently, he found "the custom of the trade" was for a vendor when asked for "coffee" up to 1s 6d per pound to hand the purchaser a mixture of fifty per cent. of chicory and fifty per cent. of coffee in a wrapper marked "This is sold as a mixture of coffee and chicory." Another defendant declared that unless "pure" coffee was asked for, this mixture was always given to the purchaser.

Dr. Teed adds:—"It seems to me that if this perversion of the meaning of words goes much further, it will become necessary for tradesmen to compile a dictionary of their own, so that the simple-minded public may understand the meaning they attach to the words, which, up to now, referred to unsophisticated foods. Demerara sugar is no longer that article, but yellow crystals, unless you ask for pure Demerara; butter is a mixture containing ten per cent. of margarine, unless you ask for 'pure' butter; whisky is a spirit (mostly potato), and adulterated with an unknown percentage of water, unless you ask for 'pure' whisky, when as likely as not you will be supplied with the same spirit, but at a strength of twenty-five under proof. Cocoa powder is chocolate powder (a mixture of sugar and cocoa), unless you ask for 'pure' cocoa; yellow wax is no longer beeswax, but earth wax, unless you require it 'pure' while paraffin wax is unblushingly substituted for white wax, which is bleached beeswax; and so on. It is about time this subversion of English words was put an end to. It began with fraud, but now it is the 'custom of the trade.'"—*Home paper.*

JAMAICA.

THE VIEWS OF SIR H. A. BLAKE.

Sir Henry A. Blake, late Governor of Jamaica, naturally takes a keen interest in the welfare of the island, and his address last week before the members of the London Chamber of Commerce was an exposition of the condition and possibilities of the colony. Jamaica is not dependent upon any one industry, although sugar-planting is a very important factor. The island contains 2,692,000 acres, of which about 2,340,000 are cultivated. At present the area under the cultivation of the staple crops, is 30,000 acres in sugar, 19,000 in bananas, 25,000 in coffee, 11,000 in coconuts, and 1,700 in cacao. The value of the crops last year was £360,000 from sugar, £315,000 from bananas, and £169,000 from oranges. So that fruit-growing is developing rapidly into an enterprise of leading importance. Sir Henry Blake thinks that Jamaica has a right to ask the co-operation of the mother country in establishing a direct line of steamers between that colony and England. By that means the orange and banana industry of Jamaica would be largely improved. There is a large demand for both these products provided they could be brought to England in proper condition, and this can only be done by the establishment of a special boat service. Sir Henry Blake argues that Jamaica and the other West Indian colonies being weakened and ruined for the direct benefit of England, the home Government should come to their rescue. Barbadoes, which is entirely dependent on sugar, is in a very serious condition, as is British Guiana, and in the event of the failure of the sugar industry it will be necessary for this country to spend a large sum of money to provide these colonies with a means of revenue.—*H. & C. Mail,* March 11.

THE "COCOAS" OF LARGEST SALE.

In our Green Supplement this week is announced the result of competition in which readers were asked to record their votes for the twelve cocoa preparations having the largest sale. The result of this competition is a striking testimony to the value of enterprising and judicious advertisement. During many years chemists have taken a share in the distribution of cocoas, the names of some of which had become household words throughout Great Britain, but the result of this competition shows that these have been out-marched by a preparation which some three or four years ago was unknown. The fact that so large a proportion of a body of chemists all over the kingdom return Dr. Tibbles' Vi-Cocoa as having the largest sale is primarily due to the spirited policy adopted by the proprietors in making their specialty known to the public and to the trade, and while we do not wish to detract in any way from the credit to which they are entitled for this success their is no doubt that its achievement has been rendered a somewhat easier task than would otherwise have been the case by the supineness of the older manufacturers.—*British and Colonial Druggist,* March 18.

INDIARUBBER.

Fears are sometimes expressed that the supply of rubber from Para will stop some day, but our Consul at Para is not of that opinion. Writing at the end of December, he says that the majority of authorities on the subject are of opinion that there is absolutely no fear for the exhaustion of the supply of rubber in Amazonian States. In some cases this produce is transported as much as 6,000 miles before it reaches Para, but it is found that the prolonged transportation improves the rubber, so that when it arrives at its destination it sells for higher prices than that collected nearer the mouth of the river.

Our Consul at Zanzibar remarks that Africa may be said, roughly speaking, to be full of rubber from Zambesi to the Sahara. Hitherto the rubber brought down to the coast has been mainly collected by natives, who, under the pressure of hunger, have gone into the forests, tapped the vines and taken the balls thus extracted (one the size of a cricket-ball represents about a day's work) to the nearest Arab or Indian; but the German firm of Hansing & Co. have set the example of collecting the rubber in a systematic manner, and it is expected that in a few years a regular and better supply will be obtained.—*Chemist and Druggist.*

Blood Poisoning from Tea Bushes.—It will be remembered that Mr. R. W. Waller, of Poyston, Dikoya, was unfortunate enough recently to suffer blood poisoning in the thumb of his right hand as the result of a cut from a pruning knife, and that eventually, after consultation with Surgeon-Captain Hallaran in Kandy, that medical officer removed the injured thumb successfully, thereby preventing the probable loss of Mr. Waller's hand. We are asked to contradict the statement, however, that Surgeon-Captain Hallaran, in connection with this matter, stated that he had "often" seen blood poisoning ensue on wounds got in pruning tea bushes, as he said no such thing, nor had he seen anyone who had injured his hand with pruning a tea bush till he came across Mr. Waller's case, which was one of "epitheliomatous disease of the right thumb." It is pointed out to us that professional men who have spent their lives in Ceylon and elsewhere amongst tea planters must have thought Surgeon-Captain Hallaran's statement extraordinary, but, as a matter of fact, he never made it.

ROYAL BOTANIC GARDENS, CEYLON: REPORT OF MR. J. C. WILLIS, M.A., DIRECTOR.

(*See Supplement with Report.*)

Following the admirable example of his predecessors, Mr. Willis continues to be first in the field of all the Administering Officers of the Government, with his Annual Report. Nor is this because of less trouble or value attaching to the compilation; for, with five separate Garden establishments under his care—each of which is separately dealt with—the Director at Peradeniya has as much to look after and embody in his Report as some of our minor Government Agents who are often well beyond the first quarter of the year before they send in their returns. Let us hope for greater promptitude all round in the present year.

There is no lack of interest attaching to the contents of the Report before us; but it strikes us as less full and novel in the department of most value to the general public, that dealing with "Economic Plants," than in previous years. And indeed this was inevitable in view of the publication of the periodical "Circulars" begun a few months ago by the Director and which have been welcomed on all sides. In these Circulars, Mr. Willis has been giving information for which, ordinarily, we should have to wait until we got the Annual Report where, of course, it would add to its novelty, bulk and importance. For the future, therefore, we may consider so far as our planting and agricultural world is concerned, the Circulars dealing with horticultural, agricultural and botanical subjects and issued periodically, as to a great extent superseding the Annual Report, though the latter may conveniently sum up the more important features of the year's work. It is satisfactory to learn that the general condition of the Gardens has improved, very much due to more liberal votes, though indeed only R3,100 of an increase and about R2,000 of a special vote were required to effect the change for the better. The appointment of Mr. E. E. Green as Honorary Entomologist is heartily welcomed and he and the Director have been busy studying not only the Cacao dis ase, but also various diseases of Tea, Coconuts, Betel, Nutmegs and other plants, though we are only told results in the case of the first-named. A good deal of attention has been given by Mr. Willis to "Rubber" as evidenced by the recent special Circular and to "tapping" experiments at Heneratgoda, of which we are to hear a good deal more by-and-bye. The interest in this product has manifestly increased: 88,500 seeds of the Para kind having been sold to planters in 1897 out of the total crop of 100,000; but we scarcely think it is correct to say that the Gardens form, practically, the only source of seed from mature trees? Mr. Willis anticipates Rhea becoming an important cultivation, but only where there is an ample, well-distributed rainfall and a plentiful supply of manure to renovate the rapidly exhausted so ; two conditions which, we suspect will limit the Rheea area very much—though we are told of several planters experimenting on a small scale. A stimulus, too, in a small way has been given to Vanilla cultivation; while the fall in price has checked attention to Liberian Coffee. Mr. Willis takes an interest in the expansion of our great Coconut industry; but by far the two most important paragraphs in the Director's Report on the present occasion refer to our two upcountry staples, Tea and Cacao. In reference to tea, Mr. Willis gives a word of warning to our planters which we feel sure, will be carefully considered and duly acted on,—all the more readily because there is no dread enemy apparent at present:—

The immense area now covered with tea still remains singularly free from disease, but great care and attention must be exercised if this condition of things is to last. When an outbreak of any disease apparently due to insects or fungi is noticed, the affected plants should be at once destroyed by fire to prevent, if possible, any further spread of the disease. One or two cases have occurred during the year of outbreaks of disease among nurseries of young plants grown from Indian seed. Planters should pay special attention to their nurseries in this respect, as considerable risk is run of importing dangerous or troublesome diseases with foreign seed.

In regard to "cacao," the Director refers to the investigation made by Mr. Green and himself and how the disease was found to be due to the attack of a "fungus," which of course specially concerns a Cryptogamist; but here again we had better give the paragraph *verbatim*:—

Much attention has been given during the year to the canker mentioned in last year's report. During the early part of the year an extended investigation of the diseased areas was made by the staff of this Department, and the disease was found to be common in nearly all parts of the Central and Uva Provinces. The disease was found to be due to the attack of a fungus, whose exact nature is at present unknown, but which almost certainly belongs to the class of fungi which cause the various cankers of stems and roots. The information collected was published in two of the circulars issued by this Department, in which also suggestions were made as to the treatment of diseased areas or plants and the prevention of further spread. It was suggested early in the year that a specialist in fungus diseases should be engaged by Government for the study of this disease. This proposal, being adversely reported upon, ultimately fell through. There is much misconception as to the capabilities of a specialist. His speciality is simply to discover the exact nature and life history of the fungus causing the disease. Many persons seem to think that once this is done he will be able to propose some simple wash or other treatment which will at once stamp out the disease where it already exists and prevent its re-appearance or its appearance in new places. This is far from being the case. The treatment of a fungus disease must generally be by improved cultivation destruction of deceased plants, disinfection of the soil and surroundings, and preventive measures generally, but to cure plants already diseased is usually almost impossible. Whatever may be discovered about the life history of the fungus, the treatment of the disease will be much the same. Had the disease been dealt with when it first appeared many years ago it would not now be so widespread. There seems now but little chance of freeing the old red varieties from it in most districts of the Central and Uva Provinces. The Forastero varietiees seem much more capable of resisting the disease; the planting of these varieties is extending, and it seems likely that they will gradually replace the old red cacao to a very large extent.

It is strange no allusion is made to the presence and work of Mr. Carruthers; but until the Government extend its countenance and patronage, it may be premature to do so; and indeed Mr. Willis has done the very best service to the "Cryptogamist" by warning planters not to think that a "Specialist" can work a miracle in providing a remedy, even when he accurately works out the life history of a disease. The necessity of dealing with all plant diseases at the earliest possible stage is very clearly shown in the present case. Mr. Nock gives interesting

infotmation in regard to fruit-trees, camphor, &c.: but we refrain from extracts, since we expect to give the greater part of the entire Report as a *Supplement* (handy for reference) with our tomorrow's issue. In conclusion it is interesting to learn from Mr. Willis how usefully the Laboratory, attached to the Peradeniya Museum has been utilised during the past year, by no fewer than five scientific visitors:—

(1) Mr. W. G. Freeman, of the Royal College of Science, London, from January 1st to March 19th; (2) Dr. A. J. Ewart, Deputy Professor of Botany at at Queen's College, Birmingham, from April 6th to April 29th; (3) Dr. O. Penzig, Professor of Botany at the University, Genoa, from April 10th to April 15th; (4) Dr. G. Clautriau, of Brussels University, from May 26th to June 8th; (5) Mr. H. H. W. Pearson, Assistant Curator of the Herbarium in the University of Cambridge, from July 19th to December 7th. Mr. Freeman was chiefly occupied with studies in the anatomy of plants, Dr. Ewart with bacteriology and observations upon the effects on vegetation of tropical sunlight. Mr. Pearson made an extended study of the flora of the patanas.

The receipts from sales rather fell off last year in consequence of a very proper withdrawal from the sale of pot plants for verandah purposes at less than cost price; but the value of the Botanical Gardens and of the work of the Director and Staff is not for a moment to be considered in this connection; since the indirect return for the total expenditure of R52,500 is most ample, varied and important, and we trust some day soon will be made even more so than at present, by permanent additions to the Scientific Staff of the Gardens.

COFFEE IN BRAZIL.

Mr. Scott Blacklaw sends us an extremely interesting lotter on the present occasion—see page 677—regarding the mode adopted in Brazil in growing, harvesting and curing our old staple "coffee." So little is seen of coffee locally, now-a-days that to many of our readers, all the information will seem novel and the means of making a comparison with the usage in "days of old" in Ceylon, may be wanting. Such a picture as even one hundred acres of coffee in simultaneous blossom—the bushes white with jasmine-like flowers as if covered with newly fallen snow—or again a field laden with scarlet and purple cherries, is now unknown in our planting regions and the sound of the pulper is unheard in the land. Mr. Blacklaw brings back very vividly the time when coffee was king with us, by his detailed account of the process observed on the plantations of the Brazil and the information he affords as to the course of prices and exchange, the cost and working of colonist labour are very instructive. It will be observed that Mr. Blacklaw is very confident as to the future of the industry in the South American Republic, even if the Ceylon system of harvesting and curing be not adopted. It will be interesting to watch how far the Managers for the Dumont Company are able to introduce improvements in this direction, and how much more than the average price they are, in consequence, able to secure for their coffee in the European or American markets. We may be sure that if they score a special success, it will not be long before other proprietors follow their example and we may then find a keen demand for coffee preparing machinery set in, to the benefit of Ceylon manufacturers!

INDIAN TEA CROP.

The latest circular to hand of Messrs. W Moran & Co., Calcutta, affords us interesting information concerning the Indian tea estimates and actual crops (as made up by the India Tea Association) for the past year. Here is the detailed table:—

	Original Estimate of Crop.	Revised Estimate of Crop.
Assam	63,359,989	58,737,829
Cachar	21,540,153	20,924,401
Sylhet	26,762,000	25,470,920
Darjeeling	7,644,250	8,303,876
Terai	3,734,000	2,738,766
Dooars	24,209,720	22,955,867
Chittagong	919,000	925,458
Chota-Nagpore ..	320,000	204,588
Kangra	2,180,000	1,750,000
Dehra Dun and Kumaon (Estimate)..	2,000,000	2,000,000
Private and Native Gardens (Estimate)..	4,000,000	4,000,000
	156,669,112	148,011,705

	1897. Actual Outturn of Crop.	1896. Actual Outturn.
Assam	58,160,029	59,655,793
Cachar	20,720,053	20,401,487
Sylhet	25,405,001	25,099,486
Darjeeling	7,755,947	7,817,495
Terai	3,283,654	3,738,927
Dooars	23,960,237	22,073,781
Chittagong	1,020,659	1,030,125
Chota-Nagpore ..	146,828	220,322
Kangra	1,800,000,	2,180,000
Dehra Dun and Kumaon (Estimate)..	2,000,000	2,000,000
Private and Native Gardens (Estimate)..	4,000,000	4,000,000
	148,252,408	148,217,416

It will be seen that the original estimate framed at the beginning of 1897 was out by over 8,400,000 lb., although the revision that took place in July proved wonderfully near the actual result. The Indian tea crop of the past year was almost identical with that of 1896—only 35,000 lb. of increase! Assam is responsible for more than 5 million of the decrease on estimate; Cachar and Sylhet for over 2 million more.

A further table shows export and distribution of Indian tea from 1st April last year (the beginning of the Indian tea season) up to 15th Feb. instant. Here are the figures:—

Total quantity of Tea passed through Calcutta from 1st April to 15th February.

	1897-98.	1896-97.	1895-96.
Great Britain ..	132,155,252	131,412,381	120,223,505
Foreign Europe.,	761,084	436,258	276,295
America ..	2,015,133	1,926,909	1,080,234
Asia ..	3,365,481	4,190,289	4,787,951
Australia ..	6,634,662	5,863,192	6,581,356
	144,931,612	143,829,029	132,949,341

The total increase on the previous season is only 1 million lb., and the comparative increase in 1897-8 over 1896-7 to Australasia is not quite 800,000 lb., while it is very little above the shipments thither in 1895-6! Ceylon is doing a far better tea business with our Australian Colonies. The increase to America direct from India is also very gradual: let us hope 1898 may show up better.

CEYLON TEA IN RUSSIA.

The main business transacted at the meeting of the "Thirty" Committee on the 16th Feb. in Kandy had to do with the promotion of Ceylon tea in Russia and the work of advertising is evidently to go on apace; for Mr. Rodigue is to be once more patronised with Ceylon funds, and £1,000 are voted to Messrs. Crosfield, Lampard & Co. to advertise and push our teas in the same country; while, above all, Mr. Christie is empowered to arrange for systematic advertising of Ceylon teas in Russian newspapers.

But far more important, in our opinion, than all these steps, would it be to send in a well-considered, carefully-worded Memorial—say from the Ceylon Association in London—to the Russian Minister of Finance, pointing out the great field there is for benefitting the imperial revenue, the trade of the empire and the Russian people as a whole, by following the British example and reducing the duty on tea from 1s 10½d to 1s, to 8d, or even to 6d per lb. It cannot be said that revolutions or conspiracies are nourished on tea, or that the reduction of the tea duty would tend to the spread of Nihilism or Socialism in any form. Quite the other way about! Cheap tea and universal tea-drinking in Russia should lead to increased happiness and general contentment among the common people; while the Czar's exchequer would, at the same time, be greatly benefitted. Who will (not "bell the cat," but) enlighten the Czar and his Minister? That, in our opinion, is now the chief problem in connection with the future of the Consumption and Prices of Ceylon and Indian teas.

EXPERIMENTS TO TEST DURABILITY OF WOOD.

Eleven pieces made like paving blocks were buried to about ⅔ of their length in sandy soil in an exposed sunny place in the grounds of Wilhelmsruhe, Turret Road, on 3rd October, 1896. Six of the pieces were marked by means of tin tacks driven in on one side, and three were marked by notches cut in the side. The two outside pieces were not marked and are Kumbuk. The first examination of the blocks was made on 21st October, 1897, *i.e.*, just over a year after they were put in. All the portions exposed to the sun and air were slightly cracked, especially Tumpalai, but with the exception of Illupai, all the pieces were sound. The following report as to each piece is:—

Outside piece "Kumbuk" covered by fungus on exposed side and slightly touched by white ants otherwise sound.

One tin tack. "Illupai" (Mi) from E.P. half eaten through by white ants.

Two tin tacks. "Tumpalai" E.P. somewhat cracked on top surface, under ground outside wood a little soft, otherwise sound.

Three tin tacks. "Kumbuk" E.P. sound-wood slightly softened on surface.

Four tin tacks. "Kumbuk," N.W.P. sound.

Five tin tacks. Milla E.P. quite sound.

Six tin tacks. "Halmilla" E.P. one side slightly eaten by white ants, otherwise sound.

One cut notch "Mukalai" (Munamal) E.P. quite sound.

Two cut notches "Palu" N.W.P. quite sound.

Three cut notches "Palu" quite sound.

Outside piece "Kumbuk" outside sligtly eaten by white ants. A. F. BROUN.

—*Ceylon Forester*.

TEA IN SOUTHERN RUSSIA: MR. WEBSTER AGAIN.

The following is an excerpt from an article in the *Pioneer* entitled "A Trip to Central Asia":—

Anglo-Indian readers will be interested in the fate of the attempts lately made to introduce tea into Southern Russia. The Empire imports between 50 and 60 million pounds of that product by sea: for arrivals by caravan from China are yearly dwindling in quantity. Of this 22 millions come to Odessa, mostly carried at very low freight, by the "Volunteer fleet," which would otherwise return nearly empty from the Far East. The source of supply has, till recently, been Northern China. But I heard at Odessa that a broker named Trautman had imported eleven tons of Ceylon tea with very satisfactory results. Mr. Trautman was in the China trade as far back as 1843, and has thus watched the markets for more than half a century. It argues well for the future of Indian tea in Russia that he should have embarked in the new venture. I learnt from a Mr. Webster, whom I met on the Black Sea steamer, that large shipments of our Indian product have been made during the last few months to Terbizond, a Turkish port on the southern shore. The route taken is *via* Bombay and Aden, where the tea is transhipped into vessels of the Volunteer fleet. From Trebizond it is smuggled across the Russian frontier, which is protected by Cossacks open to pecuniary influences. The pioneers in this branch of trade are Parsees. Mr. Webster is a Ceylon planter and shipper of old standing who has, for the last three years, been engaged under the auspices of a Ceylon association in preaching the gospel of Indian tea throughout the world. He is, perhaps, the greatest traveller in an age of universal locomotion; and, as he is equally interested in our northern plantations as a shipper, planters may rest assured that if markets can be found for their product Mr. Webster is the man who will find them. He gave me some deeply interesting particulars of an effort to introduce the cultivation of the cheering plant into Caucasus. Three years ago it occurred to a millionaire merchant of Moscow, a Mr. Popoff, that tea grown in the Russian Empire would escape the customs duty of 1s. 10d. per pound which the imported article is charged. With the sanction of Government he took up a few acres in the Tchakvi Valley, eight miles north-east of Batoum, and set out 150,000 China plants. This was three years ago, and the produce is already so assured that a specimen was presented to the Tsaritsa and was honoured with Her Majesty's approval. The Government has a small plantation in the neighbourhood, and there is a third belonging to the heirs of a Russian colonel. In all a hundred and fifty acres or so of tea have been planted in the Western Caucasus. The climate is everything that can be desired, for Batoum is as rainy a place as Darjeeling of Silchar, but Mr. Webster is inclined to doubt whether the soil is not too heavy and agrillaceous to produce tea of respectable grade. I tasted a sample on the steamer, and, though a layman, was able to pronounce it to be rather oily and rank flavoured. Mr. Webster, however, thinks it suitable for Russian consumption and fully worth the 6d. a pound at which an Odessa expert valued it. It is beautifully made by hand, for Mr. Popoff is no believer in machinery."

INDIAN TEA ASSOCIATION.

TEA FUND FOR AMERICA.—NEW BULKING REGULATIONS.

Abstract of Proceedings of a meeting of the General Committee, held on 7th January 1898:—The Chairman announced that the contributions promised to the American Market Fund amounted to Rs 1,02,039, being R1,635 below last year's levy but he pointed out that this did not include the sum of £200 contributed by the Assam Company

in London. In his letter of 26th November, the London Secretary stated that he had called on the Secretary to Her Majesty's Customs in reference to the question of granting further facilities for the bulking of India and Ceylon tea of the same mark arriving by different ships, at the London Warehouse, and (he subjoined copy of the fresh regulations which had been issued on the subject,) which substantially conceded all his Committee had asked for:—"The following Regulations, affording further facilities for the bulking of India and Ceylon tea are to be brought into effect in the Port of London. "(1) Parcels of Indian and Ceylon tea bearing the same garden mark, but imported by different ships, may be bulked together for home consumption, exportation or ships' stores. "(2) On request to the surveyor at the station at which any tea proposed to be dealt with under this order is to be warehoused, the bringing to account of the first and subsequent consignments may be deferred until all the packages have arrived provided that no package remain in warehouse for more than two months from the date of the ship's report, without being weighed and brought into account" The same letter contained an extract of a letter from the Managing Director of the Assam Company as follows:—"I am much of opinion that the large quantity of tea-sweepings now imported, tends to lower the value of dust, and looking to the fact that we can now obtain no more than 2d per pound for sweepings, leaving us certainly not more than 1d per pound net, it is pretty clear to me that if all growers would cease shipping this stuff, we should be the gainers inasmuch as there is a good demand for theine and if the manufacturers cannot get our cheap rubbish, they must come to the market and compete for dust. "Please consider this, and see if you can get the views of other shippers." After some discussion the Secretary was instructed to write to the London Secretary, and request him to forward particulars as to the demand in London for dust and the amount of dust and sweepings respectively imported.

In this letter of 3rd December, the London Secretary stated that his Committee had tried in the past to introduce a reform in the system of nett weighment, but their efforts had not been rewarded by any permanent improvement in the system of weighing tea in the warehouses. They would, however, give due consideration to the question again, in view of the expression of opinion entertained by the General Committee.

He also stated that a meeting of Members had taken place, and in consequence of the views expressed by those present, the following resolution was passed unanimously, *viz.*, "That the Association regrets that it does not at present see its way to induce Members to conform to any general rule in the matter of printing the place of bulking, and that Members be left to act as their interests may suggest." —*Indian Planters' Gazette*,

THE PLANTERS' ASSOCIATION AND CACAO.

The annual meeting on the historic "17th" terminated with a very useful piece of business accomplished on the initiative of Mr. de Sanctis, by securing the consent of the Association to defray the cost of much-needed analyses in connection with the cacao plant. We shall look with interest to the result of these analyses and to the comparisons which can then be instituted between our trees and those of Trinidad and other cacao-growing Colonies, where analyses have already been accomplished. We can quite understand how Mr. Willis in all good faith gave his opinion at the time he did to Mr Thistleton-Dyer, against the sending out of a Cryptogamist. It must have been after the decision arrived at by Mr. E. E. Green and himself that the fault of the cacao-planters trouble lay in unsuitable soil, want of drainage or proper cultivation. However, now that a Cryptogamist has arrived and is at work, we feel sure that Mr. Willis rejoices in his presence and work (which will be valuable even if it proved a 'negative' as regards a fungoid enemy), and will be ready, if required, to recommend the support claimed from Government by the Planters' Association.

A LUCKY BOX OF TEA.

(*Communicated.*)

The aged and wealthy proprietor of one of the finest residential estates on Donside, Aberdeenshire, sat one autumn day in his back parlour. He lived a very retired life, seldom seeing anyone and had a specially well-rooted objection to receiving his near relatives.

A tea planter at home on furlough, was fishing in the Don—the trouts were not taking—and the idea struck him—"I will go and call on the old buffer." "Ah, you need not trouble yourself" said a friend, "for he has for years declined to see those more sib.*" "Karinm illa," said the planter as he strode up the steps, "I'll try;" knocked at the door and was admitted by an ancient butler, who took up his card and duly brought back the message that the master did not receive visitors but he might have any refreshments he wanted "Then I do not want your refreshments," said the indignant doray as he walked out upon the lawn in high dudgeon; but scarcely had he got half down the avenue when the old appu overtook him—Gehasi-like—but only to say, "Please come back, master says he would like to see you, he did not notice you had come from afar." So back went the free and easy planter—had a long confab with the rich old Laird,—the burden however of which was a chest of tea the latter had purchased and with regard to which he was wishful to know if he had been overcharged. "By no means" was the verdict of the expert; "it is good tea, but we do make better and I will send you a sample box when I return." A promise which fortunately he did not forget; for no sooner had he returned to the weary totum than he despatched a 40 lb. box of the best B. P. to Donside, which duly arrived while the old gentleman was swithering over his last will and testament, when—impulse of the moment—down went the name of the mindful giver of the tea, for the whole property:—a magnificent estate with £80,000 of accumulated funds!

Barely a year passed by when one day as the planter was sweating amongst his pluckers, up ran a coolie gasping, with a telegram in his hand, which telegram briefly intimated the death of the old Laird and the fact that he (the planter) had been left *sole* heir! "None of your practical jokes on me," said incredulous "Pekoe" as he pocketed the missive and thought little more about it. But next day came another and another cablegram from Aberdeen Agents asking for instructions, when it occurred to the planter that the Aberdeen lawyers were hardly likely to waste money on worthless jokes. So he wrote to his Colombo Agents to wire a reply and ask for particulars. When, sure enough the intimation was repeated: "All right, *sole* heir, the only condition being that he returns home, lives a decent life and invests the overplus capital in buying more land." Need I say that that tea totum had soon to seek

* Anglice=near-of-kin.

another periya doray and that our fortunate friend found his way to Donside without any undue delay. Never did a retired Indian more enjoy his *otium cum dig* and never did a district more appreciate good tea. Now the moral of this *absolutely true story* is,—never forget the smallest promise, and let each planting proprietor be as much as possible his own dispenser. Were it possible to approach and convince the august "Thirty Committee of Ceylon," one year of the funds wasted on comic advertising, would enable every planter in the island to send boxes of tea to friends in every part of the world!

[What a lame conclusion to a romantic tale all the better for being true. Whoever heard of money being *wasted* on Advertising—comic or otherwise? Planters no doubt send plenty of boxes of tea as it is; but there are no more lairds swithering over wills to receive them like the one on Donside!—ED. *T.A.*]

AN OLD CRY:
WANTED A SCIENTIFIC AGRICULTURAL DEPARTMENT.

It is no new cry for us to take up, that of the need of a Scientific Agricultural Department; and that we are again referring to it, is for the object of bringing prominently before the Government what has been done elsewhere in the same line, and the happy results which have accrued therefrom. The failure of the sugar industry in the West Indies has been so widespread and so serious that after the report of a specially appointed Commission to inquire into the causes, the Imperial Government has decided to grant some relief, but in what form has not yet been specified. The bounties on beet sugar have all along been credited with the West Indian disaster, and it has been regarded as another instance of the few suffering for the benefit of the many. The masses have been able to get their sugar cheap, at the expense of the bounty-paying Governments. It is said, of course, that British planters have had to go to the wall; but the balance of advantage to the nation at large far outweighs the loss to the West Indian growers. We find that a journal so literary and metropolitan as the London *Spectator* has been discussing "Mr. Chamberlain and the West Indies," in an article which we reproduce on our seventh page. On the causes of the West Indian collapse, our contemporary lets in considerable light, and it is rather startling to find him saying "We very much doubt, however, if the West Indian planters really know their business." Tropical Agriculturists will, perhaps, open their eyes to find that the *Spectator* - the organ of the leisured and cultured classes at home—is coming out as an authority on sugar-growing, but so it is! The West Indian planters are old-fashioned, and stick to their ancient methods of extracting the cane juice; and while nature has blessed them with the finest soil for sugar growth, they are now on their beam ends simply from want of scientific knowledge. While it takes 16 tons of cane to make 1 ton of sugar in St. Kitts, Egypt can do as well from 10 tons, Queensland from 9 tons and Hawaii from 8 tons, and the Egyptian and Queensland sugars are worth £3 a ton more in the world's markets! Java, too, has been able to hold its own. The writer of the article under review, quotes from *The Sugar Cane* as follows:—"The Java planters, though heavily weighed by the low prices lately current, and by the occurrence of a new disease which has done extensive damage, continue to hold their own, being greatly assisted by the capital chemical control of their factories, and the valuable information supplied by their experimental stations. Every possible advantage is secured to them in this manner, *and their enviable position is mainly due to their intelligent utilisation of all the hints that agricultural and chemical science are continually affording them.*"

The lines we put in italics contain the key to the success of the Dutch planters of Java. They have been handicapped in the same manner and to the same extent as the West Indian planter has been; but they have stood the strain, whereas the others have broken down. It is presumable that what Java could do, should be accomplished in Barbadoes which is "perhaps naturally the finest island under the sun for the growth of sugar"; but simply for want of agricultural and chemical science locally applied, is all but bankrupt. It is to be presumed that in time British colonists and tropical planters will wake up to the need of having the best scientific advice available for all kinds of tropical agriculture and in all tropical colonies, but necessary reforms of this kind are slowly evolved. Our home authorities have the courage to run a railway through a sparsely-populated and a lean, unhealthy land; although when approached for a specialist for such a thing as the cacao disease, they fail at first to find one. A thoroughly equipped Scientific Department, ready for every kind of agricultural investigation, would pay the country and the whole body of agriculturists (native as well as European) a great deal better than broad-gauge lines to the North, and the thing must come, if Ceylon is to keep in the forefront, and not to get into the same lamentable position as the West Indian islands named.

W have just been recording an American opinion in regard to the better quality in appearance and liquor of Java pekoes; and although, of course, we maintain that our island can match anything going in the way of teas, still a rival in the race may creep upon us, and our place may become second by-and-bye. Certainly the Dutch planters with their Experimental Gardens and Scientific Experts have a decided advantage over the Ceylon tea-grower, who has to find out pretty much for himself and often cannot find out, simply from want of scientific training. In every branch of tropical agriculture, there is always cropping up some surprises. To have at hand a reliable Department willing and able to investigate any agricultural question, would be the natural state of things in a colony, whose whole property is bound up with the land; but we have got so used to do without it, and to wait until untoward events have become serious, instead of stamping them out to begin with, that this haphazard way is not only tolerated but regarded as the pathway of true wisdom. How far it is, however, from holding any such advanced position, let the present lesson from Java and the West Indies illustrate, and let it so come home to our rulers, that it may be as a word to the wise—to be acted on before it is too late

COCONUT PLANTING IN KURUNEGALA DISTRICT.

KURUNEGALA, Feb. 23.—The weather is seasonable for this time of the year: hot and dry, and reaping and thrashing of paddy are in full swing. The outturn of crops will be fair. Rain would be

welcomed for plants planted out late last year, and I am inclined to think, we shall have it before long. A large acreage is going down this season for coconuts. The health of the people is good, but cattle are suffering from a disease, I don't quite understand; it is neither murrain, nor hoof and mouth disease. I have lost two animals, and I hear that many animals are down with it in this neighbourhood.

PULPING FRUIT.

Several correspondents have asked for information concerning the pulping of fruit. The Fruit Expert, Mr. W. J. Allen, reports:—The following is the method of pulping fruit in Mildura, where apricots and peaches are the principal fruits used, viz.: —The fruit is first pitted and put into a copper or cauldron, and a little water added (proportion—1 gallon of water to 3 cwt of fruit). It is then boiled for twenty minutes (*i.e.*, twenty minutes from the time it starts boiling). Unripe fruit will require a little longer, and should the fruit be watery it can be cooked without adding water. When first put it is stirred constantly to keep it from burning. After cooking it is put into tins and the tins soldered whilst hot. Occasionally the fruit is cooked in the tins, and when this is done the tins, after being filled and closed, are punctured and immersed in water to within, say, 2 inches of the top, or just so that the water will not boil over the top of the tin and get into the punctured hole. The fruit is cooked for twenty minutes, as explained, and the hot air is blown off through the hole. As soon as cooked the tins are sealed. Ten pound tins are the best when the fruit is cooked in this way, as the reaction draws in and disfigures larger ones. The fruit done in tins is not pulped or mashed to the same extent as that which is boiled and stirred in the cauldron —*Agricultural Gazette*

COFFEE PLANTING IN CEYLON.

Mr. Frank Adam, largely interested in coffee planting in Java, who has been on a visit to our island since December last, leaves next week for India, and we trust that he may have a pleasant and profitable trip. Since our last interview he has visited the Nuwara Eliya, Kandapola and Dolosbage districts, and whilst he has been favourably impressed with the state of these he prefers not to express any opinion in regard to the tea industry as it may be judged from what he has seen in the course of his travels, as he considers that he has not been long enough in the country. With regard to coffee, Mr. Adam considers that bold coloury plantation sorts such as those of Ceylon and Java, which can only be cultivated on certain favoured grounds will always hold their own despite any drop that may occur in the price of coarse coffees such as Liberian, Brazil, &c. That had been demonstrated by the fact that in the London market recently some Ceylon Plantation Coffee was quoted at 151s whilst Liberian was quoted at 35s. His latest advices from Java were that notwithstanding the drop on the other side and the fact that the new crop would not begin to come in until March offers were being made for delivery in Java at 60 guilders per picul, crops of private estates W.I.P. coffee, that is about 97s 6d per cwt. in London. Private estate coffee from Java is assorted in four grades, viz., large, middle-size, small, and peaberry, as compared with five assortments from Ceylon, the additional one from Ceylon being extra large size. One thing that had struck him on going through Ceylon in 1894 compared with now was the great increase in shade planting as seen on different estates. He thought that in Ceylon shade trees were in some respects even more important than in Java inasmuch as he observed a large area in 1894 deforested and carrying nothing but tea. In the event of an insect pest making its appearance it would on such deforested areas have nothing but tea to attack whereas shade trees would form an alternative object of attack; besides this shade trees served to attract birds, who are the foes of insect pests. Several planters had asked him his opinion as to the best kind of shade tree. His opinion distinctly was that the Dadap was the best shade tree. The Dadap however in some districts in Java had suffered from disease which had baffled the scientist so far and dried up the sap in the rees leaving a wilderness of skeletons. In such cases Java planters found it better to replant with Albizzia, the Moluccana variety being preferred. On some young coffee plantations in order to doubly safeguard the matter of shade it had been found advantageous to plant alongside of each other the Dadap cutting and Albizza seedling. In the event of the Dadap failing the Albizza is allowed to grow up in its place whereas should the Dadap strike well the Albizza can be stumped. The grevillea is not very much used in Java. Whereas grevillea is a good alternative to Albizza on a *new* plantation it has a tendency to grow up of a poplar and spindly character if planted on an old plantation to replace Dadap, the reason being that owing to the shade of the coffee trees which in Java are at a height of 5 ft. and higher, the young grevillea growing beneath the shade does not get the same amount of air and sun as it would on a new clearing alongside the coffee seedlings which it is later on intended it should shade.

RUBBER CULTIVATION.

The cultivation of Rubber is attracting a good deal of attention in the Malayan Peninsula, in Borneo and other far Eastern Lands. Mr. Ridley, of the Singapore Gardens, has compiled a valuable bulletin on the subject, and Mr. L. Wray. Curator in Perak, has come out with a second paper, supplemented by a "report on the tapping of the Para Rubber trees at Kuala Kaugsar." All that is of essential value in these several papers we hope to include in detail in our future issues. But meantime, we may notice, that Mr. Wray is in favour of the "herring-bone" method of tapping, with lateral and vertical cuts, but not to meet each other. He quotes Dr. Trimen, Dr. G. Watt, and Mr. J. C. Willis.—From the Kuala Kangsar Report of Mr. Derry, Superintendent of the Government Gardens, we quote at once some very practical and interesting remarks:—

I would particularly point out that the experiments have not been conducted to test how much each tree would yield, for the reason that these trees are of much greater value to the Government at the present time as seed bearers than rubber producers; as an instance of this I would mention that applications for 70,000 seeds have been received for the current year (of which 25,000 have been supplied) and an application filed for 100,000 seeds next year. The Para rubber trees (*Hevea braziliensis*) at Kuala Kangsar were first tapped during the month of August, and the work has been proceeding up to the present time. The frequent wet days have delayed the work considerably. At the end of October, 60 trees had been tapped and 88 pounds of dry marketable rubber prepared. Most of the trees tapped were six years old, and from these trees an average of 10 ounces of dry rubber has been obtained,

A few trees, twelve years old, produced 3 pounds each, but in no instance were the tappings exhaustive. Two samples have been sent to Mincing Lane for opinion and valuation.

Tapping.—The trees were tapped with almost V-shaped cuts, a few inches apart, with a channel down the centre from the lower branches to the base. An ordinary pruning knife was used to make the first cuts, and about a quarter of an inch of the outer bark removed, care being taken not to cut too deeply. So soon as this commenced to callus, which varies from two to several days, the edges of the cuts were lightly shaved with a very sharp chisel every day, with an occasional interval, until the decided quantity had been exuded. The rubber was collected in locally made tin boxes, 6 inches by 4 inches by 2 inches, nailed at the base of the tree, with the lid partially opened so as to prevent wet or dirt from falling in. When full this was allowed to dry, and the water pressed out (a pinch of salt appears to expedite the coagulation), and then kept in smoke for about a week to prevent mildew.

Time of Tapping.—Para rubber has a short resting season, when most of the leaves fall off. The flowers usually appear first, and when the tree is in full foliage tapping can be commenced and carried on with different trees until again deciduous The first cuts can be made at any time of the day, and may be left for weeks in the event of exceptionally wet weather, but the subsequent tappings should always be done in the evening as the rubber soon ceases to exude with the influence of the sun.

COFFEE IN HAWAII.

A British consular report on Coffee Culture in the Hawaii islands gives a very fair account of cultivation, but nothing specially new. The estimates, however, are worth referring to. They include the purchase of 100 acres of Government land at 10 dollars (say £2) per acre :—

	Dollars.
Outlay, 1st year = ...	6,955
2nd year	3,080
3rd year	5,070
	15,105
By 20,000 lb. (below 2 cwt. per acre) of coffee at 18 cwt.	3,600
	11,505
Outlay, 4th year	6,220
	17,725
By 60,000 lb. coffee	10,800
	6,925
Outlay, 5th year	7,570
	14,495
By 85,000 lb. coffee	15,300
Credit at the end of 5 years ..	805

We then get an outlay in the sixth year of 8,820 dollars and a credit of 100,000 lb. of coffee equal to 18,000 dollars, and in the seventh year the crop is 125,000 lb. against the following outlay :—

	Dollars.
Manager's salary	1,200
Labour, 12 Japanese	2,160
Picking, pulping, and drying 125,000 lb. of coffee, at 4 c.	5,000
Hulling, polishing, and grading 125,000 lb., at 1 c.	1,250
Sundries : bags, freight, etc. ..	1,200
	10,810

The result after 7 years is a balance to credit of 21,675 dollars, (not counting interest) and of course a valuable property.

THE JAVA COFFEE CROP.

The first Government estimate for the growing Java crop is 128,000 piculs, against 490,000 piculs this season. The new Private crop is estimated at 190,000 piculs, against 500,000 piculs.

The duty payments and deliveries of coffee in the Zollverein in 1897 were 135,790 tons, against 129,900 tons in 1896; in Holland, 73,476 tons, against 67,117 tons in 1896.—*American Grocer.*

PLANTING NOTES.

The San Jose Scale.—We (London *Times*) learn from the *Deutsche Landwirthschafts-Zeitung* that the German Minister of Agriculture is taking active measures with regard to the possible infestation of furit-trees by the San Jose "Schildlaus." A small committe of well-known entomologists and botanists has been appointed to investigate the matter, and steps are being taken to render fruit-growers and other cultivators familiar with the appearance and the life-history of the dreaded *Aspidiotus perniciosus.*

Coffee in India seems doomed, though it is fighting bravely against heavy odds. An Indian contemporary says:—The coffee crops just gathered in the Ouchterlony Valley and in South Wynaad are lamentably poor, and are said to be the worst on record. No estate has yielded anything like an average crop. Planters are hopeful and are already looking forward to the present year's yield, which promises to be good should the early spring showers fall at the right time.

Ceylon Tea Companies.—An interesting article from the *Financial News* on this subject is quoted in our daily columns. It deals with the steady increase in the consumption of Ceylon tea and shows by figures how it continues to be one of the most distinct features of the tea trade. Ceylon tea is considered to be at present one of the best investments on the market and in proof of this statistics of dividends are given ; *but only of a few of the most flourishing Companies.*

Planting in Badulla.—In another column we give some interesting notes on this subject from a correspondent. The low price of tea and the high price of rice we touched upon, the statement being made in regard to the latter topic that so far as the writer can see there is no reason why a greater proportion of the food stuffs which are daily consumed should not be grown by the labourers themselves. Our correspondent also considers it folly to construct the railway to the North on the 5 ft. 6 in, gauge.

The Largest Coffee Estate in Brazil comprises 110,000 acres of which 13,000 are planted with coffee, and 20,000 more are suitable for coffee trees. It was sold recently for $5,838,000. The trees in bearing rose from 1,300,000 in 1892 to 2,096,500 in 1895. The profit in 1895 was $637,000; the estimated profit for 1896 is set at $711,000. The total number of trees in this plantation was, in June 1896, 4,426,604, of various ages, and it is estimated that two-thirds of the trees being new, from 1897 onwards, an average harvest of 100,000 bags (13,200,000 pounds) may be expected, and that, in three or four years, the yield may increase to 250,000 bags or about 32,500,000 pounds per annum. The next largest estate in Brazil is of 9,785 acres, with 1,800,000 trees, populated by nine colonies with 260 families, furnishing some 1,500 laborers. There are several other plantations on which grow more than 1,0000,000 coffee trees.—*Planters' Monthly.*

SCIENTIFIC MANURING.

We observe that our old friend, Mr. John Hughes has been writing a letter to the Church of England *Guardian*, on the subject of the very article on which we made some observations in our issue of the 28th ultimo. The counsel of the experienced Analytical Chemist is much on the same lines we followed, and he does not withhold commendation of the article which struck us as very guarded and judicious. He points out that it is very unusual to apply cattle manure and artificials combined; and he indicates the value of the latter for spring crops. While doing so, he is very emphatic in his refusal to discredit well-rotted cattle manure, and points to the conditions which must decide on the value and utility fo manures. As truly remarked, agriculture is not a Science but an Art; and the successful agriculturist is the man who is most patient observant, and calls in the aid of science at the proper time. Here is what Mr. Hughes writes :—

"The interesting and very practical criticism of recent manuring experiments which appeared in the *Guardian* of December 22nd, must have been read by many country clergymen with a personal interest, because their prosperity is closely associated with that of agriculture. In many cases the parson is a very good farmer himself, and his previous education and ability of assimilating special technical knowledge enables him to progress with the times to a much greater extent than the average farmer, who has been brought up in the immediate locality, and has, perhaps, never travelled beyond his own county.

"It may be useful, therefore, to state that artificial manures are not usually applied in conjunction with farm-yard dung; indeed, the special value of such concentrated manures is that the industrious and enterprising farmer is enabled by their use to supplement and extend the average of land manured in one year, because no farmer, whether upon arable or grass land, has sufficient ordinary dung to dress the whole of the land that requires it. Moreover, these special fertilisers, containing the necessary elements of plant food in a generally soluble form, are therefore, immediately available for the use of spring crops, so that, under ordinary circumstances, the farmer who gets his artificials from a respectable firm may reap an increased crop before he pays for the dressing in the following autumn. But these fertilisers should be judiciously employed, after taking proper advice; otherwise the results may be just as unsatisfactory as the German pot experiments with cow and horse dung have been shown to have been, though it is rather too late to be induced to believe that *well rotten* dung, whether made in Germany or elsewhere, is not a reliable manure. Agriculture after all is not a science, but an Art founded upon long experience.

"The conditions which cause it to flourish or to fail are *not fixed*, nor under the control of man. *Soil, season, situation, seed*, and the personal *skill* of the farmer in the management of his workmen, his crops, his herds are the great and chief factors that affect the success of the ordinary farmer.

"Science, of course, is in capable hands and if locally available in the nearest maket town can materially assist the farmer in the purchase of his fertilisers and feeling stuffs, in the selection of good seed, in the treatment of his stock, and in pointing out with the aid of analyses in what respects his soil many be specially deficient.

"Field experiments, carried out by the farmer himself, will give him, after a series of years, some useful information in regard to his own *particular* form; but it will not be safe for him to assume that experiments carried out in other localities, upon probably, very different soils. are likely, under a totally different season, to yield similar results on his form. It is important that these facts should be remembered; for in these days the agricultural press is constantly reporting the results of field experiments carried out in various parts of the country.—John Hughes, F.I.C., District Agricultural Analyst for Herefordshire."

PLANTING NOTES.

"The Agricultural Ledger."—1897—No. 19. Aconitum A. Ferox, var. Crassicaulis, and A. Napellus, (the Roots). Dictionary of Economic Products, Vol. I., A. 397-413.

High Prices for Coffee.—Middling Plantation Ceylon coffee realized in February 1874 in London as high as from 135s to 139s per cwt. Choice "Peaberry" would certainly secure a good deal more. Indeed "Peaberry" often gets a fancy price above the ordinary market. But it is very notable that so old an Uva coffee estate as Mousagalla—we saw the first clearing we think in 1865 when on a visit to old Thomas Wood of Spring Valley—should realize for its Peaberry in 1898 so high a figure as 150s per cwt. (when Middling Plantation Ceylon is down to 103s), Would that Uva could show an appreciable area still flourishing under the old staple!

"The Indian Forester," a monthly Magazine of Forestry, Agriculture, Shikar and Travel. Edited by J. S. Gamble, m.a., f.l.s. Conservator of Forests, and Director of the Forest School; Dehra Dún. Contents for February 1898, are as follows :—Original Articles and Translations: Note on the Forest School tour in Oudh. No. 1, by F. Gleadow; The effects of fire on grazing and the production of grass, by "X"; Note on a White Ant preventive, by Gokal Das; Willow for Cricket Bats, by B. U. C." Correspondence: Concentric Rings in the Mangrove, letter from A. W. Lushington; An Imperial Forest Blazer, letter from "Nil Desperandum." Official Papers and Intelligence: Note on the Fructification of Deodar by B. Ribbentrop; Reproduction of Teak by means of Taungyas, by ditto. Reviews: Forest Conservancy in Ceylon during 1896. Shikar and Travel; Extracts, Notes, and Queries; Timber and Produce Trade; Extracts from Official Gazettes; Appendix Report on the Manufacture of Spirits of Turpentine and Colophony by J. L. Pigot.

Bird-Eating Spiders in Ceylon.—"Smoothbore" writes to the *Field* of Feb. 12th :—"Referring to Mr. William Hardy's note as to the spider he found eating a bird on his estate in Ceylon, it may be useful to note that there are two species of Pæcilotheria or "embroidered" spiders in Ceylon, and not found, so far, either in India or Burma. Pæcilotheria sub-fusca has the first segment next the body of the first and second pair of legs (the femur) entirely velvety, black or brown in the lower or ventral aspect, and has no colouring; whilst P. fasciata has the same segment lemon yellow, with a narrow black stripe across it. Mr. Hardy is the first observer who has recorded the fact that one of these spiders is a bird eater. The natives state that they do eat birds; but to the best of my remembrance Sir Emerson Tenant was unable to confirm the statement. I hope that the description I had given will enable Mr. Hardy to identify the species of spider mentioned in his note."

COFFEE PLANTING IN BRAZIL.

(From our own Correspondent.)

Rio de Janeiro, 11th Jan. 1898.

Since I wrote you last the price of Brazilian coffee has risen a little in New York. The end of November No. 7 was 6⅝ cts. per lb. at 10th December it was 6⅝ cts. at which figure it has remained for the rest of the month. The question arises can

COFFEE PLANTING IN BRAZIL

pay at these low prices? We must consider that *exchange* or the gold value of Brazilian currency is a strong factor in the case. Labourers' wages (paid in currency), do not rise and fall with exchange; but the amount in currency which the planter receives for his coffee is larger when exchange is low. Planters always calculate their coffee by the arroba—or 15 kilos. Coffee was understood to pay at seven millreis per arroba, when exchange was at 24d per millreis or even at par 27d per millreis. Even with these low prices in New York, the price in Rio has seldom been below twelve millreis per arroba for the last twelve months. Exchange was at 8d for the first half of 1897, and 7½d the last half. With exchange now (in December) at seven pence coffee No. 7 is selling in Rio at twelve mill two hundred reis per arroba. The planter is thus receiving in currency 80 per cent above what was formerly considered the paying limit, while the cost of production and transport has not risen 50 per cent. The low value of currency though, has effected very much the price of labour in towns and on public works—where all necessaries have to be imported and therefore paid in gold—but on the plantations where the colonist-labourer produces his own food on the ground allotted to him by the planter, he consumes the imported article only in the shape of clothes and luxuries. Those planters, however, who do not work on the colonist system, but by days labour have to pay double what it cost them formerly in currency. By days' labourer the production of food stuffs—even at the enhanced price to be paid for imported food—cannot be made to pay. Rice comes from Rangoon and Siam, other cereals from the river Plate. Beef comes also from the latter place, and the United States sends lard and flour and all these have to be paid for in gold.

It is long since the

SAO PAULO PLANTER

found out that the colonist system of labour was the cheapest. For that State—Sao Paulo—alone more than 60,000 principally Italians have been introduced every year for the last ten years: 1896—74,000; 1895—104,000 in round numbers are the official figures. I have not time to go into the calculation which the figures as to price of coffee, exchange, and colonist labour suggest; but it will be seen that although the price of coffee in consuming countries has fallen considerably—and small prospect of a rise while Brazil continues to give enormous crops—capital judicially invested in coffee property in Brazil is safe enough if in good managing hands.

The present Government seems in earnest to try and stop the

ANNUAL DIFICITS

and reduce expenditure, but it is a long way from seven (7d) pence—the present rate of exchange—to the par of twenty-seven pence (27d) per millreis. Every one expects that with a rise in exchange there will be a rise in the price of coffee. The present low prices cannot continue, consumption will increase. Comparing the gold price of plantation labour with that of other countries—Ceylon and India for example—in Brazil it is about four times more, but with all this owing to the system of cultivation or rather want of cultivation adopted, the production of coffee is not more expensive, than in other countries.

The system formerly in use in Ceylon of

PLANTING

is 6 feet by 6 feet, cutting down the tree and keeping it down to 3½ or 4 feet, the two handlings, and one knife pruning per year, costing a vast number of days' labour, would never pay in Brazil. Weeding must be done in all countries and under any system of cultivation. The five weedings a year in Brazil, costs five times more than your monthly weedings in Ceylon. Then as regards the

GATHERING AND CURING OF THE FRUIT,

there is a vast difference the Ceylon system of picking consisted in picking only such fruit as was fresh and ripe, and the trees were gone over four or five times during one picking season, and the cherry skin was separated from the bean the evening of the day the fruit was gathered. The beautiful white parchment was dried with three days' sun, and a pretty clean sample was shown after the parchment and silver skin were taken off. How differentin Brazil! Trees are planted 12 feet by 12 feet. Thanks to superior soil and a suitable climate, they grow up, spreading their branches out, towards the light to a height of 12 feet, each tree like a bunch of growing bamboos. Immediately before the gathering season commences, the ground is weeded clean and left in a hard swept surface under the trees, this prevents the over ripe berries which fall, from growing, but the season being dry all during the picking time, the beans have not a tendency to sprout. After part of the cherries are dry on the trees, another part are fresh and ripe, and a small proportion are still grown, the men, women and children of the colonist's family, with long hooked sticks pull down the branches, and strip the secondaries of all that is on them, not respecting always the leaves. All goes to the ground on the clean surface, above referred to. The fruit is gathered up passed through a wire sieve, which removes earth, while sticks and stones are picked out by hand. Cart roads are plentifully made through the plantations, where the cherry is heaped—each colonist having his own heap. The mule-carts come round several times during the day, when the coffee is measured and put into sacks, and the quantity entered in the colonist's pass-book.

CURING

is a very simple matter: most of the drying grounds, are of earth, but a few are of mortar, and cement, some are of flat bricks, but all are beside the machinery house, and stores. Large stores are not required if the estate is near a railway. The coffee lies on these drying grounds for about a month, being turned occasionally by the workmen's feet, and put up in small heaps when there are signs of a shower. Only heavy rains do damage by washing the coffee off the drying ground—but this happens towards the end of the season, and on badly formed ground. When dry enough to pass through the huller without clogging, the cherry is washed by passing down a wooden sluice-spout, ending in a large trough with wire bottom. The earth and stones collect in the spout, and the dry coffee floats down, sticks are caught by hand while floating down. It is raked from the trough into baskets—the workman protecting his shoulders by a gunny sack—and spread out on a clean drying ground, for the last time. A day of sunshine makes it brittle and crisp for entering into the hulling machine. There are several kinds of hullers and different sets of cleaning machinery, but in nearly all the arrangements are such that the dried cherry goes in at the hopper of the huller—"Descascador" they call it—passes through fans and sizers, and is received in sacks, and weighed, when it is ready for transport to the nearest railway station, *en route* for Rio de Janeiro or Santos, to be sold in the country. On very few estates in Brazil is there water enough to drive machinery, indeed in the famous Ribeirao Preto district there are many very fine plantations which have not water enough to wash the coffee in the manner I have described above. In these cases inventive genius has supplied machinery for separating sticks and stones, before the dried cherry passes through the huller or "Descascador". You will think this system of picking is very hard on the trees, but judging from the manner they send out young wood and leaves after the first shower, the damage does

not seem to be much. After a long dry crop season the first rains send out flowers all over; dry secondaries, primaries, and even stems, send out their flower buds. The same rule applies in Brazil as in Ceylon—an old coffee tree say above ten years will not give a heavy crop twice in succession. In the State of Sao Paulo, should the old trees bear little any *one year*, the regular or increase of quantity is made up by many young clearings coming into bearing.

A great deal of energy and money have been spent in trying the Ceylon mode of curing in Brazil. If Brazilian coffee were amongst the sixties, instead of Santos *good average* selling from twenty-seven to thirty-two shillings per cwt. (*vide* Knowles and Foster's report, 16th Dec. 1897) I believe from fifteen to twenty shillings per cwt. more could be got for it and this would go a long way to cover the extra expense in gathering the fresh cherry. The unsuitableness of the labour system, and partly the thinness of the cherry skin, with a very small layer of saccharine matter adhering to it, have hitherto been objections. The first can be remedied by an increased supply of cheaper labour, and with exerting patience in teaching the proper mode of picking, and the second by improving the Ceylon Coffee Pulper to suit such thin-skinned cherry.

In the time of Slavery—before 1888—a great deal of Coffee in the Province of Rio de Janeiro was sold as "washed" coffee. This had undergone the pulping —or what was more appropriately called here "dispulping"—process, and was washed and dried in the parchment. It always sold much higher than the other. To increase the saccharine matter in the cherry it was always kept in water cisterns for twelve hours before *dis*pulping.

COFFEE BEGINS TO RIPEN

in the State of Sao Paulo, end of March, and the first picking of fresh cherry would take place beginning of April. This is just the time the colonist, his wife, and children are securing their crops of rice, beans, Indian corn, potatoes, &c., for the year's consumption. There would be small straggling pickings until July, when the larger part of the crop ripens, and there would be small pickings after that until middle of September. The usual form of colonists' contract would not admit of this. By the present system the colonist commences picking in June, or the day after Sao Joao (St. John)—which is 24th of June—the trees are gone over only once, in the manner above described, and generally all is secured before the September rains set in. The good colonist is anxious to get over the crop picking quickly, for he has his ground to prepare for planting corn, beans, rice and potatoes, before these same rains cease. The coffee tree has thus a rest before the principal blossoming time—the middle of October.

THE PICKING

difficulty could be overcome by the introduction of Japanese labour. The Brazilian Government have a treaty with that of Japan, which allows these labourers to be imported. The "Japan Emigration Company," composed of bankers, capitalists and merchants in Japan, have appointed as their agents in Brazil Messrs. A. Fiorita & Co., ship-brokers and Government contractors for European Immigrants, having offices in Rio de Janeiro and other ports. These have lately issued a prospectus showing the advantages of such immigration and the rates of pay and passage-money which the planter will have to contract for. If they may not be cheaper than European colonists—the Government having hitherto paid passages and all expenses of the latter up to collocation on the plantation—they will be more tractable as they work in gangs, and their work can be depended on for the time of their engagement. Here is what they will cost the planter, and it must be paid in gold or its equivalent:—

Passage money, £14 each ..	.. £ 14
Wages, 17 dollars a month, gold, 3 years	.. 126
Return passage, should he elect to return	.. 10
	£150

or £50 a year. They feed and clothe themselves, but are allowed house, water and firewood. The contract is for three years, each immigrant is submitted to a medical examination before leaving Japan and certificate of health given. If on arrival he is incapable of working the advance given by the planter is repaid. If he runs away during the time of contract, part of the passage money will be repaid in proportion to the time he has worked. If the immigrant elects to remain in the country the planter has not to pay the £10 for return passage. The advantages are that the planter can be able to plant other things besides coffee, that will help to pay for the extra wages the Japanese labourer requires.

The ground given to

EUROPEAN COLONISTS.

to plant on, is low-lying ground subject to frost in the cold months, and not suitable for coffee planting, although it could grow all the cereals the colonist requires to plant, and these same lands could be utilised to produce by Japanese labour not only these cereals for which there is a good market but sugar-cane and cotton. The first cost of establishing colonist labour, comes very heavy on the planter. The Government tries to relieve it by paying the passage and all expenses of the colonist family up to the time of collocation on the estates. The recruiting in Europe and steamer passage being arranged by contract with Italian shipping agencies, the colonist arrives at the Government Depot free to contract himself as he chooses. This certainly saves the planter a large sum. Those planters who struggled for the first ten or fifteen years to introduce European labourers were not thus relieved, but this served as a sop to the Fazendeiro for relieving him of his slaves. The houses for the families to live in have to be built by the planter, and large pastures planted with perennial grasses, and strongly fenced to keep hungry cows, and horses, from breaking through when the dry weather dries up the grass. A cow is a necessity to each family and the colonist is not long in the country before he buys a horse also. The houses are generally built in sets of two, each thirty feet by thirty inside. The house must be covered with tiles, have two doors and two or more windows. The wealthy planter makes the walls of brick or stone, but a great many have walls of weather boarding. The corn store, the pig and cow-houses are made by the colonist—and the dwelling house he is allowed to divide into rooms to suit himself.

A set of two colonists 'families' houses will cost £100 or £50 for family. To make a good well fenced pasture will not cost less than £10 per family. This expenditure—of £10—a family—may be called reproductive, and it is an improvement to the estate. As soon as the colonist arrives on the estate, he gets an advance of money to buy a cow, a stock of pigs (young ones) and soon after—when the season comes—another advance to buy seed to plant his patch of ground. Food must be supplied from the estate store but charged to his account to keep him and his family until he has produced food stuffs for himself. Somehow the colonist very soon supplies himself—from these advances—with a gun, powder and shot, and some musical instrument.

The good colonist pays off these advances in two years; the indifferent may have still something to his debit at the end of his five years' contract, and the bad may take a "moonlight flitting," and the utterly worthless have to be got rid of, at any cost, or at any loss.

These advances may amount to £80 or £100 by the end of the year. A regular debtor and creditor account is kept for each colonist. This is balanced at the end of crop season. If the colonist is owing anything, it is carried forward to next season, and if the balance is in his favour he is at once paid in cash.

The colonist's contract is generally for five years. Not all have the same system of remunerating the colonist. Some are on the half and half system, that is half the cherry coffee goes to the colonist and half to the proprietor, but the latter takes all for curing and cleaning. Others pay so much per 50

litres of cherry picked by the colonist, the latter giving five weedings as well as the gathering for that fixed amount. The first mode is unsatisfactory, because of the difficulty of adjusting accounts. The second equally so, because some years the crop is small and does not satisfy the colonist, and when he sees he has little to receive at the end of the year he shirks his weedings. The mode which many have adopted, and which works more smoothly, is to give a fixed sum for the five weedings, and another for the quantity of cherry picked. The price for the weedings is 80 millreis per thousand trees which at exchange of 10d per millreis would he about twenty four shillings of sterling money per acre, and for picking one millreis or ten pence per 50 litres or about 1½ bushels of cherry—about the size of your cherry-box of which the task per cooly used to be two per day. This system always leaves the planter in a difficulty as to labourers for working for the drying-ground, the machine-house, and cartmen, cattlemen, &c.

These

DAY LABOURERS

are generally found from a vagabond sort of class, native Brazilians with a good deal of coloured blood in them, and freed slaves, a very difficult class of people to manage. Their pay is three mill-reis to three mill five hundred reis per day—equal at 10d exchange—to two shillings and sixpence to three shillings per day. These can only he got by paying a large advance to clear them from their former employer, and if a disagreeable word is said to him he leaves without any thought of paying what he owes; sometimes the advance is got from his next employer, but in many cases the planter loses it entirely.

The introduction of

JAPANESE

even at the high rates mentioned above would be a good substitute for these and it ought to have a fair trial.

I may mention that since the introduction of European families on a large scale, many of the young unmarried men work as day labourers, but they soon get into the careless habits of the Brazilian working only when it suits him, observes church and national holidays religiously, loses one day before each in capturing his horse and cleaning him, and one day after because he is tired, and however pressing the planter's work may be, he has to endure it, and practise that most important virtue *paciencia.* Happy is he who possesses that in a high degree.

With all this unsatisfactory system of working, coffee-planting in Brazil, has paid well for many years, and even with large stocks in the consuming centres and consequent low prices, there is no reason to apprehend that capital judiciously invested in coffee property is anything else but safe. With all the fluctuations in exchange and the steady lowering of the value of paper money, coffee properties have kept their value in gold. Rents of houses in towns have more than tripled. He who has lost greatly is the careful man who has deposited his money to be repaid in currency. The poor man who has been "laying bye for a rainy day" the foreign commercial or railway employée, who looked on the savings from his large salary to visit his native country he finds his passage ticket requires nearly four times as much in currency as formerly, and if he turns the rest of his savings into gold he finds he has more than two-thirds less than he ought to have had. The Commercial house which has not tripled its capital representive in currency has been losing. British Exchange Banks have all paid well during the last ten years, hut their cash balances and other accounts are represented by very much larger sums than formerly taken in currency. With all this there is no need to fear that things are without a remedy. Brazil is a large country, its resources are enormous, to use Mr. Chamberlain's phrase "it is a large undeveloped estate." By abstention from party strife, and conscientious and honest administration of public affairs, by not allowing the expenditure to exceed the income and by an honest attempt to set aside part of the revenue, to replace by gold and silver the enormous accumulation of paper money, Brazil will yet become a great country. There are many men amongst them of great ability and good education, but in public affairs the real interests of the country have to give way to party, and paid patriotism is of the worst kind sickens and pollutes public life. I have not left room to enter into other topics which I intended to, when I began this epistle; but must leave them for a future occasion.

Wishing you and the "old rag" a happy and prosperous New Year, I close this long rigmarole of a letter.

A. SCOTT BLACKLAW.

PLANTING NOTES.

PAWPAW JUICE.—The pawpaw juice mentioned by Mr. J. F. Bailey in his article on the Pawpaw (*Queensland Agricultural Journal*, Volume I., Part 3) as being worth 10s per lb. in London, is now quoted at five shillings per lb., and is easily obtained from the unripe fruit. The *Chemist and Druggist* gives the following as the best method of preparing it:—The juice is pressed out of the fruit, clarified by filtration through a twill bag, and the ferment precipitated by alcohol. It is then dried, but is sometimes purified by treatment with water.—*Queens and Agricultural Journal*, for February.

"THE QUEENSLAND AGRICULTURAL JOURNAL."—Vol. II, Part 2. February 1898. Contents:—The Wheat Crop of 1897; Co-operative Bacon Factories; Agriculture—To Keep Sweet Potatoes; Wheat-growing by Irrigation at Barcaldine; Wheat-growing at Roma; Dentition of Sheep; Directions for Curing Heavy Pipe and Export Tobaccos. R. S. Nevill; Notes on Silos and Silage; On Cross-breeding. P. R. Gordon; Darying; Horse-breeding; Poultry; The Orchard—Propagation of Fruit Trees. A. H. Benson; Viticulture—Fermentation of Dust. E. H. Rainford; Appointment of a Viticulturist; Botany—Contributions to the Queensland Flora. F. M. Bailey, F. L. S.; Plants Reputed Poisonous to Stock. Ditto; Popular Botany—Our Botanic Gardens, No. 3; Seeds for Exchange, with Short Descriptive Notes; Apiculture—Beekeeping; Wax-extracting; Horticulture—Perfume-making as an Adjunct to Horticulture; Tropical Industries—Picking Coffee; Coffee at Landsborough; Coffee Cultivation in Brazil; Ramie Fibre Experiments in New South Wales; Ramie Fibre—An English Manufacturor's Opinion; Entomology—The Dissemination of Yeasts by Insects; Pisciculture—The Giant Perch; Forestry—Forest Conservancy—Part 3. A. J. Boyd; The Markets—Average Prices for December: Farm and Garden Notes for February; Orchard Notes for February; Public Announcements.

DURIAN IN THE WEST INDIES.—The well-known Durian tree of the Indian Archipelago (*Durio Zibithinus, L.*) has been successfully introduced to the Botanic Gardens, in the West Indies, but hitherto it has not fruited anywhere except at Dominica. In 1895, and again this year fruits have been produced by a tree growing in the garden of Dr. H. A. Alford Nicholls, C.M.G., at St. Aroment. This was originally received from Kew with numerous other plants sent out to the late Dr. Imray and to Dr. Nicholls, in exchange for Dominica plants, contributed at the private expense of the two gentlemen above mentioned. Reference is made to the St. Aroment Garden in the *Kew Bulletin* for 1887, June, pp. 9-10; and a list of the economic plants already established there was given in the *Bulletin* for July of the same year, pp. 10-12. It is gratifying to find that all the seeds saved from the Durian fruits so far produced have been placed by Dr. Nicholls at the disposal of the Botanic Station at Dominica, in order that plants may be raised for distribution to other parts of the Western tropics. One fruit was lately received at Kew, but, unfortunately, it did not arrive in good condition. Those interested in the subject may see a fine plant of Durian, about fifteen feet high, in the Palm House, where it has been established for about fifteen years, but so far has not flowered.—*Kew Bulletin* for November 1897.

DUTCH (JAVA) PUBLICATIONS.—We are indebted to Messrs. G. Kolff & Co., the well-known publishers at Batavia for two handy little publications in Dutch—(1) "Assam-Thee. Haar Culture ten Bereiding op Java Door Ch Van der Moore"—an evidence (in its 109 pages) if such were required, of how the general interest in tea cultivation is spreading in Java. The next is rather different:—"Uit Oud-Batavia: De Portugeesche Buitenkerk door Dr. F. de Haan, Uitgegeven Ten Bate van een fonds tot het Restaureeren dier kerk"—an extremely neatly got up brochure with an engraving of an old picture of a place of worship and people entering.

"THE AGRICULTURAL GAZETTE" of New South Wales, Volume IX. Part 1, has the following contents for January 1898:—Wine-making—Fermentation; Useful Australian Plants; No. 49.—The Pigmy Panic Grass *(Panicum pygmœum, R. Br.)*; No. 50; —The Stringybarks of New South Wales; Botanical Notes—Fruit-tree and Vine Pests; Comboyne Brusoh Bees, and How to manage them, Part I.; Fowls for Profit; Export of Oranges; The Improvement of N. S. Wales Stock; Ensilage up to Date; Bee Calendar for February; Orchard Notes; Practical Vegetable and Flower Growing; General Notes; Replies to Correspondents; List of Agricultural Societies' Shows for 1898; Label for Specimens.

MAURITIUS is not to be behind Barbadoes or any of the West Indian islands; for, in Governor Sir Charles Bruce's "Council of Government," on 21st December last—the full report has only just reached us in Port Louis papers of Jan. 29th—the Hon. H. Leclezio after a long speech moved and carried the following resolution:—

"The Council of Government join with the Chamber of Agriculture in the resolutions voted at its meeting of the 13th December intant, and beg that His Excellency the Governor be pleased to give them his support and to forward them to the Right Honorable the Secretary of State for the Colonies for his favourable consideration.

"The immediate measure of relief prayed for will largely contribute to keep up the Sugar Industry of the Colony which is now threatened with extinction.

"The Council think that the sum of £400,000 will be sufficient to meet the objects of the Chamber of Agriculture.

"The Council are also of opinion that, with the view of protecting the agriculture of the Colony against the effects of the frequently recurring droughts which visit it, and with the view of improving the sanitary condition of the Island the re-afforestation thereof be completed, and they recommend for that purpose that His Excellency the Governor be pleased to move the Secretary of State for his sanction to add the sum of £100,000 to the above loan to be applied to the re-afforestation scheme of the Colony."

The Sugar Industry of Mauritius would be all right if an "honest rupee" was observed—so Mr. Chamberlain has good reason both in the interests of Ceylon and Mauritius to withstand the policy of the India Office and to support the appeal from producers in the East led by the United Planters' Association of India. Mr. Leclezio concludes his speech as follows:—

No man understands better the wants of the Colonies than Mr. Chamberlain. It is well known that he himself selected the Post of Secretary for the Colonies in order to devote his great abilities and energy to their progress and expansion and to strengthen the bonds of Union between them and the Mother ountry. What he has already done has proved his desire to promote the welfare of those Colonies. We may therefore trust that an appeal to him will not be made in vain; that the British Government will consent to guarantee that Loan and, that their generous assistance will enable this Colony to maintain its past honour, to be saved from ruin and to remain a not unworthy jewel to the British Crown.

THE CONSERVATORS OF FORESTS.—Mr. J. A Broun, writes to the *Madras Times* denying the truth of the report that his brother Mr. A. F. Broun, Conservator of Forests, Ceylon, was wounded by him and had to apply for an extension of leave. These facts are entirely incorrect, he adds:—"Mr. A. F. Broun was *not* wounded by me, nor did he apply for an extension of leave. He was granted the leave which he applied for before leaving Ceylon. Had the "Ceylon Standard taken the trouble of writing either to my brother or to myself before publishing this untrue report they would have saved themselves the necessity of cancelling it."

THE PEARL FISHERY OF CONWAY—says Sir Walter Besant—seems to interest many readers, if one may judge from the letters received. The following information, the last I can promise on the subject, will enable everybody to go off fishing for themselves. There are two kinds of mussels found in the Conway river. The first, which is rare, is 5½ inches long by 2½ inches broad. The pearl found in this kind is said to be very fine, and in size and quality not inferior to the Oriental pearl. The other kind is much smaller; it is found in great quantities on the bar of the river, where it used to be gathered by the sackful at low tide. The sacks were then carried to a place where great iron pots filled with water were hung up over fires. Here the mussels were boiled. The fish were then taken out and put into a tub, where they were stamped with bare feet till they were reduced to pulp; water was then poured in; the animal matter floated, the sand and pearls sank to the bottom; when the pearls had been collected they were sold to buyers in the trade at a price varying from eighteen pence to three shillings an ounce. Nobody, it is added, ever knew what became of these pearls.

TEA BULKING.—Mr. J. Buckingham, C.I.E., Chairman of the Assam Branch, Indian Tea Association, has addressed an important communication to the Calcutta Association on this subject, embodying the views of the Assam planters and what they think of bulking. The *Indian Planters' Gazette* tells us:—

Mr. Buckingham sums up the advantages of bulking in India as follows:—(1) Saving of time in London in bringing tea to market; (2) Saving of warehouse charges to the extent of about 1s per chest says £73,000; (3) Prevention of risk of damage to leaf through bulking in England; (4) Less liability to loss in weight, test packages only being weighed; (5) The superior condition in which the packages reach the buyer, estimating at 1 farthing per pound only, would be equivalent to over £150,000; and (6) The absolute certainly of a sample from one chest being a genuine sample of the whole break, and thus obviating the possibility of the trade having parcels of tea thrown on their hands on account of irregularity. While the disadvantage are these: the slight delay occasioned in keeping teas until the requisite amount of tea to make a break was secured, and accompanying fire risk; chance of tea deteriorating in bulk; the cost of erecting air-tight bins for keeping tea in. The possibility of teas being damaged by water or by any other cause during transit, which in the case of non-bulking in England would not be discovered until the tea was sold, and the utter impossibility in many cases of getting even tares to the boxes. Mr. Buckingham, however, disposes of these, and he says, there is no reason why gardens should not take united action in this matter, and have a registered mark for teas guaranteed "bulked," the names of all such gardens being registered in London and Calcutta. From the planters' point of view, therefore, it appears to be in every sense desirable that factory bulking should be adopted.

LONDON TEA REPORTS.

We issue for our planting and mercantile subscribers the usual "blue" circular with reports on tea and sales of Ceylon tea. The market report on "Ceylon's" runs as follows :—

CEYLON.—A second week of heavy auctions proved too much for the market and prices gave way all round to the extent of fully ½d. per lb., medium brokens being frequently difficult to dispose of except at a still further reduction. Average for week 7·40d., against 8d. same period last year. Ceylon tea sold on Garden Account 1st Jan. to date 1898, 141,060 pkgs., av. 8d. 1897, 126,290 pkgs., av. 8d.

In addition there will be found in another column a letter from Messrs. Gow, Wilson and Stanton, regarding the progress that has been made in the development of the sale of British-grown teas in North America. In 1897 the quantity was 5,698,596 lb. as against 1,489,479 lb. in 1892 : in five years the quantity of Ceylon tea imported has quadrupled. It is noteworthy that the sale of Indian tea progresses at about the same rate in North America as that of Ceylon does.

Messrs. Wilson Smithett & Co., in their memoranda for 1897, which we shall give with an early issue, say :—

The cry of over-production has been warningly reiterated for years past, but so long as planters show due regard to the quality of the leaf plucked we see the reason to indulge in pessimistic apprehensions. When we consider that the increase in the Imports of Ceylon tea during 1897, over those of 1896, amounted only to some 2,000,000 lb., whilst the total deliveries showed an expansion of over 7,000,000 lb. we need add nothing to allay any fears on the score of over-production. It has long been felt that if Foreign and Colonial markets could be brought to recognize the economic and dietetic values of Ceylon leaf, a safety-valve against any prospective over-supply would at once be assured; consequently the efforts of all interested in the industry have for some years past been directed towards popularising the article in all Colonial and Continental tea-consuming countries. It is one of the hopeful signs for the future of the Ceylon tea industry, that the effects of producers and distributors alike in exploiting new markets have hitherto been eminently successful. One of the leading features of the market during the past year, perhaps the feature for which we have to be most thankful for, is the important expansion in the re-exports to the Continent. When we point out that more than a quarter of the substantial increase in last year's consumption of Ceylon leaf is due to foreign appreciation and support, and that fully 10 per cent. of the Imports into the U.K. last year were re-exported, and almost entirely to the full benefit of the producer without any intervening profits, owing to the orders received for auction on samples sent out previously, we feel entitled to indulge in hopeful anticipations for the future, and to congratulate planters on a success which has certainly never been vouchsafed in anything like a similar degree to their Indian brethren. As we anticipated years ago the merits of the Ceylon leaf have been most fully recognized and appreciated by the Russian distributors. For many years the work of gaining over this important market proceeded silently, patience and diligence in submittimg samples being duly rewarded by the important Russian orders which now almost weekly constitute an important factor in the competition at the London auctions.

THE LETHENTY TEA ESTATES ASSOCIATION, LIMITED.

The first ordinary general meeting of this Association, incorporated on October 9th, 1897, was held on February 3rd at Winchester House, Old Broad Street, E.C.

Mr. W. J. Skene, the chairman of the board, who presided, informed the shareholders that the meeting was but a formal one summoned in compliance with the provisions of the Companies' Act, 1862, at which no real business was proposed to be transacted, but as it provided him with an opportunity of speaking to the shareholders as a body he must avail himself of that opportunity by giving them a little general information on the subject of their undertaking. In the first place, he stated that the whole of the debenture capital and the whole of the share capital, with the exception of £4,500, which the board thought it desirable to hold in reserve, had been allotted, the whole of the estates had been conveyed to the company, and thereupon mortgaged to the trustees for the debenture holders, and all other formal matters in connection with the amalgamation of the properties and businesses satisfactorily completed. Further, he stated that since the date of the first general allotment applications for shares to the extent of upwards of £3,000 had been made by persons having interests in Ceylon and knowledge of the company's properties, but that the board had not thought it desirable to allot any portion of the reserved shares, as the available working capital of the company appeared to be sufficient. With regard to the business of the Association the Chairman stated that the reports from Ceylon were highly satisfactory, both as to the product of the estates and the prices realised on sales at Colombo, and that a substantial increase in the demand on the part of their home customers had occurred, which they had had considerable difficulty in satisfying, owing to the fact that, pending the completion of the transfer of the properties, they had thought it expedient to realise a larger proportion of their output in the Colombo market at good prices then offering, and their shipments to England had, as a consequence, to some extent fallen off.

The Chairman further stated with regard to the retail or private trade, which up to the date of the formation of the Association had been strictly confined to sales of one fixed quality, all other qualities being disposed of in the Colombo market, that the directors having satisfied themselves that the demand for other qualities was such that they were justified in putting additional qualities on the home market had given directions for the regular shipment from the estates of two other grades of tea for sale at lower prices, wholly distinct from the particular grade of tea hitherto known in England as "Lethenty tea," the grade of which would be strictly maintained as heretofore.

Generally the Chairman stated that the board retained all their original confidence in the prospects of the Association, and that everything that had occurred since the formation of the Company tended to confirm their belief that after the initial difficulty and expense incidental to the conversion of several separate businesses into one joint concern had been allowed for, the Association would be found to have started on a happy and prosperous career.

Mr. Skrine, one of the directors of the Association, then addressed a few words to the meeting in confirmation of what had been stated by the chairman, pointing out the desirability of every shareholder doing his utmost to supplement the efforts of the board by spreading the knowledge of the company's business amongst their friends and all other possible customers with whom they might be brought in contact.

The meeting then closed with a vote of thanks to the chairman, proposed by Mr. R. A. Cameron, and seconded by Dr. Bolton.—*H. & C. Mail*, Feb. 11.

TEA IN AMERICA.

EXPERTS' REPORT ON IMPURE TEA.

(From the *American Grocer*, Jan. 26.)

WASHINGTON, Jan. 23.—The full text of the recommendations of Board of Tea Experts is as follows :—

NEW YORK, Jan. 21, 1898.

Hon. Lyman J. Gage, Secretary of the Treasury, Washington :—

SIR,—In accordance with your instructions to select standards of teas under the Act of Congress approved March 2, 1897, entitled "A bill to prevent the im-

portation of impure and unwholesome tea," we have the honor to report that we have selected and purchased standards for the season beginning May 1, 1898, and respectfully recommend that all arrivals of tea after that date be governed by these new stan ards.

We have the pleasure to inform you that the law has been successfully executed up to date, and that in consequence the crop which has arrived since May 1, 1897, is unprecedented in its quality and purity beyond any previous season in the knowledge of the tea trade.

With a view to preserve the protection afforded, our people by this salutary measure, and realizing the supreme importance of uniformity in the examinations at different ports, we respectfully recommed that the number of examiners be reduced to not more than four in all, the Act having, with careful forethought, specified three as the proper number, and that one examiner only shall take charge of both the ports of Tacoma and Portland. We can bear witness that the whole tea trade from the Pacific to the Atlantic coasts, excepting the locality interested, are unanimous regarding this point as the principal menace to the successful administration of the law, and in considering the reasons assigned for extra examiners at these ports as entirely unfounded or misconceived.

In order to promote uniformity in the methods of examination we have considered it necessary to suggest the following regulations as a substitute for those previously issued in Department Circular No. 69, page 8.

COMPARISON WITH STANDARDS.

In comparing with standards' examiners are to test all teas on these points, namely, for cup quality, for any foreign matter on the surface of the infusion, sometimes called scum, and for quality of leaf after infusion. Cup quality shall be ascertained by drawing, according to the custom of the tea trade, with the weight of a half dime to the cup. In country green teas, imperials, hysons, coarse leaf gunpowders and extra young hysons are to be compared with hyson standards, and all other young hysons and small leaf gunpowders with the young hyson standard. The quality must be equal to standard, but the flavour may be that of a different district, as long as it is equal in sweetness. As an illustration, a Teenkai may be equal to a Moyune, but a distinctly smoky or rank Foochow or Wenchow of sour character must not be considered as equal to the two first mentioned.

In order to test for floating coloring matter or scum and also for the quality of infused leaf, a second drawing should be made of double the foregoing weight. Before disturbing the infusion examination should be made for any floating substance, and after pouring off the water the infused leaf should be taken out so as to exhibit the lower side which rested against the cup. Should the mass show a larger quantity of exhausted, decayed or inferior leaf, or foreign substance than the standard, it shall be considered inferior in quality, and the tea must be rejected. In greens and Japans, particularly, the brightness of the leaf should be considered as an evidence of quality.

Should a tea prove, on examination, to be inferior to the standard in any one of the requisites, viz: cup quality, scum, or quality of infused leaf, it shall be rejected, notwithstanding that it be superior to the standard in some of the qualifications. All consideration of the appearance or so-called style of the dry leaf shall be omitted.

It is recommended that Macao or Canton Congous be compared with the standard for South China Congou, and that brick tea be compared with the standard for the district whence it comes. The mustiness or damaged flavour exhibited in certain Canton teas imported for Chinese consumption shall be considered as sufficient cause for rejection.

TESTING FOR DUST.

The dust and fannings in all Formosa, Foochow and Amoy Oolongs, Canton teas, Congous, Indias and Ceylons must be restricted to 10 per cent. when sifted through a sieve of No. 16 mesh, made of brass wire. In order that the needle leaf and Pekoe tips may not be confounded with dust, they must be returned with the dust to the sieve for a second and third sifting until separated.

In the case of Ceylon and India teas the needle leaf and Pekoe tips shall be separated by passing them together with the dust through a No. 26 sieve of brass wire, after the tea has been first sifted through a No. 16 sieve.

Dust and fannings in Japan teas must not exceed 4 per cent when tested by a No. 30 sieve of brass wire. Before condemning any tea for dust, examiners shall sieve at least two packages.

Examiners should preserve in tin for one year samples of all teas examined, for future reference, in case of complaints, and the Board of General Appraisers should also retain a portion of all samples sent them on appeal for the same object. To this end, examiners should always send the Board samples of at least half a pound, and never otherwise than in tin cans securely labeled.

Valuable statistics, showing the quantities of various kinds of teas, admitted and rejected, can readily be furnished by examiners should you see fit to instruct that records be preserved which heretofore have been omitted.

The following are the standards adopted:

No. 1. Formosa Oolong.
No. 2. Foochow Oolong.
No. 3. Amoy Oolong (to be adopted later).
No. 4. North China Congou.
No. 5. South China Congou.
No. 6. Indian Tea.
No. 7. Ceylon Tea.
No. 8. Pingsuey Green Tea.
No. 9. (a) Country Green Tea. Y. Hyson.
No. 10. (b) Country Green Tea. Hyson.
No. 11. Japan Tea, pan-fired.
No. 12. Japan Tea, sun-dried.
No. 13. Japan Tea, basket-fired.
No. 14. Japan Tea, dust or fannings.
No. 15. Scented Orange Pekoe.
No. 16. Capers.
No. 17. Canton Oolong.
No. 18. Scented Canton.

Respectfully yours, (Signed) E. A. Shoyer, of Chicago; A. P. Upham, of Chicago; A. P. Irwin, of Philadelphia; H. G. Woodworth, of Boston; Mansfield Lovell, of San Francisco; Wm. P. Roome, of New York; Thos. A. Phelan, of N. Y., Chairman.

SELANGOR PLANTERS' ASSOCIATION.

The Annual Report for 1897 contains these paragraphs :—In presenting this, their Fifth Annual Report, your Committee have to announce that during the past year eight new members have been enrolled upon the books of the Association, whilst the attached statistics show an increase under cultivation of 1,854 acres and of 1,664 labourers of all nationalities employed on estates. The actual increase of land under coffee should be 2,454 acres as 600 acres of land under tapioca, included in the 1896 statistics, have gone out of cultivation this year.

These returns cannot be regarded as other than satisfactory in view of the fact that whereas in December 1896, the market quotation for No. 1 Liberian coffee was $31, the price has now fallen.

The importance of the ramie industry was brought to the notice of Government, and assistance was asked to provide for an expert to visit Selangor and report on the suitability of the various districts for the cultivation of this product. The reply of the local Government was unfavourable; but in view of the fact that both the Indian and Dutch Governments have offered considerable pecuniary assistance in connection with the ramie industry, and the cultivation being one which may greatly add to the prosperity of the Federated Malay States, your Committee addressed the United Planters' Asso-

ciation on the subject asking that body to bring the matter to the notice of the Resident-General. We regret to say that the to $19. That this latter figure shows quite an abnormal condition of things, your Committee feel convinced, and that, with improved curing, a reaction will set in appears merely a matter of time, for the Straits Settlements can always more than hold its own with regard to cost of production, as compared with Rio and Santos, whose huge crops have contributed so largely to the present depressed condition of the coffee market. At the same time, it is evident that coffee planters must turn their attention to the cultivation of other products as well, and your Committee are glad to be able to report that a large number of the valuable Para rubber trees have been planted, and that coco-nuts and ramie, the latter at present on a small scale by way of experiment, have both received their share of attention.

CREEPERS AND DEPRESSION

We are urged once more by a prominent Colombo merchant to raise our voice or rather our pen, in deprecation of the continued flow of young men to Ceylon, in order to learn "tea planting" with the hope of getting a start in life and future employment as planters. Let it be known that the planting country is "chock-full" even now of young men who have little or no prospect of remunerative employment. For one vacancy—a minor Superintendentship—recently advertised, there were sixty applicants we are told; and yet we know that proprietors, agents and inspectors find difficulty in securing the right man, whose whole heart will be in his work, in this time of depression from poor prices and high exchange. A new feature full of warning to young planters and especially new comers, is that absent proprietors must, in many cases, return to work, throwing out their managers, if the depression continues. Again, the process will be—the abandonment in some of the older planting district's of non-paying fields and at the same time, an increase of the acreage in the charge of each reliable man. Every possible means of economising is bound to be adopted; and not the least will be getting rid of young men, "creepers" &c., who have not proved themselves "worth their salt." The time has therefore come, in all seriousness, for discouraging any additions to the list of "the unemployed" in the planting districts of Ceylon.

SORTING TEA.

We believe that the tendency towards careless sorting is becoming universal, and that it should be checked, and perhaps the strongest reason in favour of more careful sorting is that the buyers and brokers complain of too many sorts. Take, for example, a merchant who dealt in coins: he should not object to finding several rupees in the bags of pice sold to him as copper only. It is strange that sorting machinery, instead of becoming more elaborate and delicate, has become more "simple," and the latest developements put temptations in the way of the Manager. A screw is provided at the lower end of the cyliuder by which it can be depressed, *i.e.*, a ready road is opened to hurry over the work when there is a press, and the tea can be *rushed* through. It is well worth thinking of. How much fine tea can you afford to present gratis to the buyers of your coarse tea, in order to save time and trouble? Is it just possible that you give away the price of an extra sorting machine by hurrying through one month's tea? Suppose that you make 72,000 lb. of tea in one month (=900 maunds=30 maunds daily) and that by hurried sorting you lose 3 per cent of orange pekoe, and this orange pekoe loses 6 annas per pound by getting into the low grade teas. The sum works out 72,000 lb. × 3 per cent.=2,160 × 6 annas=12,960 annas = 810 rupees, which is the price of an extra sorting machine. We have purposely overstated the case, but do think that many estates throw away the price of a sorting machine during the course of one whole season, and that some few actually sacrifice R1 per maund of tea by careless sorting. (The figures above show a loss of R800 on 900 maunds of tea). The buyers like careless sorting because it saves them trouble and gives them better value for their money; the brokers like it because it saves trouble; the Managers like it because it saves trouble; and the inventors of machinery supply what is wanted. We can remember the birth of sorting machinery, and some of the earliest machines had oscillating frames, into which a hand sieve could be placed and removed when sufficient tea had fallen through. Later on we took to cylinders five feet in diameter with battens inside, and the tea received the treatment which turns cream into butter.

Now we find the cylinder to be about 3 feet in diameter, the different "meshes" are 3 feet long, so that the tea has hardly time to get fully sorted; then on a heavy day you can depress the cylinder and get the work done quicker. The machine referred to is admirably adapted for its purpose (which is not good sorting, but to suit the ideas of the Managers, brokers and buyers). With sufficient inducement the maker of the machine could turn out one which would give two Orange Pekoes, two Pekoes, Pekoe Souchong, Broken Tea and Dust. But the price of the machine would be greater. Or two of the above machines would sort well if not made to "do" a large quantity. Of course, the great inducement to hurried sorting is have big "breaks," but a reference to the tea sales will show that small breaks of good teas sell well. Referring to the last tea sales, we find a Dooars garden sold 4 chests Broken Orange Pekoe at 10 annas and 23 chests Pekoe Fannings at 5 annas 8 pie. The Broken Orange Pekoe was 400 lb. the difference in price 4 annas 4 pie, and if that Broken Orange Pekoe had been put in or left in the Fannings, the loss would have been over R100, because 400 lb. of good tea would not have raised the [illegible] e of the 2,300 lb. of Pekoe Fannings. There is danger in oversorting, because the tea can be made very grey if kept too long on the sieves, but the idea is not to get more Orange Pekoe by *longer* sifting: it is that the fine teas should be extracted *before cutting* and kept separate from the fine teas extracted *after* cutting up the bulk. We are writing from experience, and so can recommend others to try more careful sorting. On some estates the first operation is cutting up the tea in a Reid's breaker, which forces all the tea through a No. 4 sieve. This mixes up all the grades; pieces of Pekoe Souchong leaf will get into the Orange Pekoe. On these estates it would be well to try how much Orange Pokoe and Pekoe can be got without any breaking, and these two teas should be kept separate. Having got out the "fine" tea, the residue could be broken in the Reid's breaker and made into Pekoe, Pekoe Souchong and Broken Tea. This double sorting would necessitate more machinery, but the difference in prices obtained would pay for that and leave a profit. We believe so much in good sorting, that we think it would pay to buy tea in the market and resort it—extracting the higher grades from the lower and selling them separately. A company formed for this purpose would also be able to score by making big breaks for America. Supposing that they bought 500 maunds of Pekoe and 500 of Pekoe Souchong; by re-sorting, they extract 5 per cent Orange Pekoe out of the Pekoe and 5 per cent Pekoe out of the Pekoe Souchong, they would have 25 of Orange Pekoe, 500 of Pekoe and 475 of Pekoe Souchong.—*Indian Planters' Gazette*, Feb. 19.

PLANTING NOTES.

THE MANGO: THE "PRINCE OF INDIAN FRUIT," AND A "DISEASE-CAUSING FRUIT."—That most cultured of Anglo-Indian statesmen, Sir M. E. Grant-Duff, has been giving a lecture before the Society of Arts on the "Recreations of an Indian Official" and very interesting he made it; but we only refer to it today to quote the ex-Governor's high praise of the mango in the following sentence:—

There were the *Anacardiaceæ*, to which belongs the omnipresent mango as to which we may say, with more truth, what Bishop Berkeley is reported to have said about the strawberry, that he had no doubt that the Almighty could have made a better fruit, but that he had certainly not done so.

This we put in contrast with information given by Sir George Birdwood in a communication to the same journal as supplementary to the Lecture in which he gives the native meaning of the names of fruit, trees, &c., and among the rest:—

Amba.—(Magnifera indica) "disease causing"; the Mango, so called by Anglo-Indians because first known to them by its Tamil name, *manka*, meaning "*man*-fruit." The fruit is apt to act injuriously on the kidneys, and cows fed with its leaves for the production of the exquisite mango yellow dye of India, obtained from their urine, die in a few months.

This is quite new to us—and, we fancy, to most of our readers—that the mango is apt to act injuriously on the kidneys (we suppose only when eaten in excess as is the case with the Bengal natives who live on mangoes at one season of the year) or that the leaves were so fatally injurious to cattle?

THE CLUSTER PINE is being introduced into West Australia by the Conservator of Forests, Mr. J. Edine Brown, who has obtained a large consignment of the seed for planting on the interior sand wastes as well as along the sea coast. Some interesting particulars are given as to the success which has attended the introduction of this timber to the Cape, where the Cluster pine at Genadendal has a clean, straight, robust growth that is unsurpassed by the best trees in the Cape Peninsula. Trees as straight as a mast and 70 feet to the first branch are not uncommon. Cluster pine timber is used for all the purposes where imported pine is employed in Cape-town, except for fine carpentry. Cluster pine answers well for floors, joists and beams; but for fine carpentry, such as windows, its hard, resinous nature makes it difficult to work. At Genadendal the Cluster pine timber is brought to the side of the road and there sold to the farmers, who come with their waggons and fetch it away. Prices are low. A sound straight log 9 inches diameter and 22 feet long would be sold for 3s. Scaffold poles 4 inches mean diameter and 36 feet long sell for 9d. The extended planting of Cluster pine in the southern and south-western districts has long been advocated by the Cape Forest department. All along the better watered south-western coast districts it exists as a hardy forest tree, requiring for its propagation only that the ground be ploughed or otherwise broken up and sown at the proper season, i. e., with the first winter rains. No plantations in south Africa, and few in other parts of the world, can be laid down so cheaply and so easily. It is as simple as sowing a field of wheat or oats. A good bushel of seed, or about 40 lb. to the acre, is required. The seed costs from 3d. to 4d. a lb., i. e., it can be obtained at this price from the Cape Government.—Melbourne *Leader*, Feb. 5.

A TEA PACKER is being sent out to the Poogbon Tea Estate. [As bulking at the factory is coming into vogue again, says a Darjeeling paper, these machines must come into more general use as it is almost impossible to get two chests of tea packed exactly alike by the old methods of pressing in by the hand or feet, one chest is bound to contain more broken tea and dust than another. At the same time it is doubtful whether more tea is got into a chest by the machine than by foot (as some assert); so we are informed by some experts who have dealt with and seen many.

LADY-BIRDS FOR MADRAS PLANTERS.—The Government of Madras has promised to contribute R2,000 towards the expenses of sending Mr. H. O. Newport to Australia to collect and bring back ladybirds to exterminate the green bug and other scale pests which are doing so much damage to the coffee plantations in Southern India, on the Lower Pulneys especially. The Government's contribution is a moiety of the calculated expense of sending Mr. Newport to Australia, placed at a maximum limit of R4,000. The planters themselves have subscribed R5,100 for this particular purpose.

"KAOLIN AND FIRECLAYS of high quality are reported to have been found in considerable quantities in several parts of New Mexico. The most important is situated near Socorro, and is now being worked. A new discovery of a large deposit of fireclay and kaolin near Santa Fe is also notified." A correspondent in sending the above asks "What about Ceylon Kaolin?"—In reply we can only say that we have some of the finest of kaolin, prized in ancient times by the Chinese for their fine ware. But although Sir Wm. Gregory tested it satisfactorily in getting imitation Sevres ware made from it; yet it was not considered that it would warrant the cost of digging, packing and freight to export it.

"HOPE FOR THE WEST INDIES."—In one of the Magazines Sir George Baden-Powell, a reliable colonial observer, finds the abolition of bounties insufficient for the preservation of the sugar and other industries, and pleads for an Imperial department for information respecting West Indian products, in connection with Kew:—

"The culminating advantage would consist in appointing a travelling Inspector of Tropical Products, who should, with a small staff proceed on regular tour, at the right seasons, to our tropical colonies to gather and to disseminate information of a thoroughly reliable and independent character."

In fact—as a correspondent observes—what is wanted is a peripatetic "T.A." ("Tropical Agriculturist" !).—Our Monthly T. A. is secured and filed in most of the West Indian islands.

FISH MANURE AND WEEVILS.—Recently a market gardener in Kent applied a heavy dressing of fish manure—the putrid carcases of sprats and starfish—on to a piece of poor land with the idea of enriching it. Soon after the ground appeared to be alive with small brown weevils, very similar to the Vine and Raspberry weevils, which played dreadful havoc with the vegetables which formed the crop. Now the gardener is at a loss to know how to destroy the hard-backed marauders, and questions the advisability of using putrid fish as a manure if it is the means of introducing pests of this kind. In many Raspberry and Strawberry growing districts fish manure is largely used, and the Raspberry weevil is the common enemy, and a hard one to fight. Is this pest introduced in the manure? because if such is the case it would pay Raspberry growers to let it severely alone. Perhaps other readers can throw some light on this matter.—KENTISH MAN.

JAVA TEA IN 1897.

The annual report on the trade in colonial products for 1897, issued as a supplement to the *Indische Mercuur* of Jan 29, contains the following information regarding Java tea, supplied by the firm of Wed. J. vander Chijs and Zoon of Delft:—

During the past year there were offered at eight sales in Amsterdam 4,871,564 half kg. of tea at an average price of 32¼ cents per ½ kg. (about 1 1-10 lb. avoirdupois) (according to the official statistics of the tea warehouse superintendents). In order the better to demonstrate the growth of Amsterdam as a colonial tea market, we append the totals of the imports, home consumption and exports since 1891. These amounted to:

	Import. ½ kg.	Home consump. ½ kg.	Export. ½ kg,
1891 ..	1,433,000	1,270,000	413,000
1892 ..	3,043,000	1,519,000	1,222,000
1893 ..	3,083 000	1,685 000	1,355,000
1894 .,	4,441,000	2,133,000	2,120,000
1895 ..	3,752,000	2,110,000	1,880,000
1896 ..	4 456,000	2,275.000	2,275,000
1897 ..	4,871,000	2,488,000	2,235,000

from which it appears, that the imports during 1897 were more than three times greater than only six years previously; the Netherlands consumption almost doubled in that short period, whilst the export was more than five times as great! The use of tea in this country is steadily on the increase, and shows an advance of about 9 per cent in the past year.

As regards the prices as these eight sales: The first sale began well, and prices even exceeded the brokers' rather high valuations; the second sale went off at somewhat similar figures, ordinary being even some cents higher. The *circa* 9,000 chests sold on April 22 went off dully, partly owing to the rather large quantity of ordinary, and also on account of the little variety. Prices however were not in that case lower than might reasonably have been expected. The auction of June 2 again brought us a large quantity of ordinary, for which there was little demand. This therefore again went off lower, whilst fine and finest teas showed a rising tendency. The demand for fine and best sorts was even more manifestly displayed at the sale of July 21, when a firm rise also took place. Notwithstanding the relatively large quantity (over 10,000 kgs.) all went off well, and ordinary was even some cents harder. On Sept. 9 again, over 12,000 chests were sold by auction, for which 400 different samples had to be tested. This quantity was however no hindrance to firm and generally higher prices. The choice also was a very good one, as buyers of the most ordinary could find what they wanted just as much as those who gave two guilders for the handsomest golden tips ever prepared by Assam or Ceylon planter. In our report on the sale of Oct. 20 we find that the prices were again on an average 3 or 4 cents higher, whilst we mention the plantations that, notwithstanding the distinctly evident advantages of our market, still continue to send their teas for sale to London. With pleasure we learn now, that the often crooked dealings and machinations on the English side, in order to retain in London that little portion of Java tea that still remains to them, have failed. With great satisfaction we see that two plantations that were formerly sold in London have now turned to the Netherlands trade. On Feb. 2 will appear invoices of the Wana-Sari and Hardja-Sari plantations, as well as that of an entirely new mark, the Tjidjerock estate. These teas will undoubtedly, when once they have been better introduced into our market and our consumption, be more considerately treated than in London, where they, in common with all Java tea, are with true English arrogance characterized as surrogates of the British Colonial hobby-horse and the product of Ceylon—which island these friends were moreover so good as to filch from us once on a time.

The last of the series of sales of the year was held on December 8. We give once more what the *Telegraaf* reported regarding this: "The firm result of the last of the eight sales held on the 8th inst. was a worthy conclusion and a new proof of the strength of our Java tea market," with which we fully agree.

We advise planters—we have already repeatedly brought this forward, and only Pangerango has complied, thus setting a good example—to keep before their eyes the fact that Java tea is a product grown by Netherlanders, consigned by Netherland boats to a Netherland market, whilst in addition this product is to a great extent used by Netherlanders, or exported. We therefore gladly set forth with emphasis the following on the programme of 1898:

"New preparation" (or planting) for the supersession of "Assam tea" or "Assam grown."

The word "Java" to be marked in large letters on the chests.

"*Ge broken Pecco, Thee* and *oranje Pecco*" in place of the foreign denominations now used, just as *Witpunt* or *zilverpunt Pecco* for socalled Flowery Pecco (with white tip) and for distinction from *Goudpunt Pecco* for the socalled Flowery Pecco (with gold tip).

RUSSIAN TEA AGENCIES IN CEYLON.

Mr. J. Findlay, special agent of Messrs. Mochanoff, Pechatnoff & Co., Merchants and Commission Agents, Hankow, Kiskiang, Foochow and Tientsin, who arrived here sometime ago and left for Hankow by the ss. "Chusan" has established an agency of his firm here which is being temporarily taken charge of by Mr. Frank Blakwill who will be succeeded in about two weeks' time by a Russian gentleman. We trust that the firm will have a prosperous time. We understand that in the course of the year, two or three Russian houses will open branches here and this, we think, looks well for the Colombo market, although we fear the Russians will not have so large a selection as they would wish. That however is a matter which rests with the planters and London shareholders. At the present moment, the Colombo prices are said to be distinctly better than those ruling in London. We understand the Russians, however, prefer to buy their teas direct from Ceylon. About 70,000 chests of Ceylon tea were used in Russia last year, and we hope that, with the advent of Russian houses here, this quantity will be very largely augmented. It is very satisfactory to learn that Ceylon tea is found very suitable to blend with China, for Russian purposes—far more so than Indian tea—and everything points to our getting an increasing hold of the Russian tea market. There is scope for a manifold increased consumption of tea among the Russian people if only the heavy Customs duty was reduced.

A CEYLON PLANTER ON THE HUNT FOR TEA SEED.

Mr. R. C. Wright, formerly of Deaculla estate, Haputale, who left Ceylon last September, has been on a most extraordinary journey, which tried even his well known powers of endurance—says a contemporary—through the Shan States in search of the wonderful wild tea of Thebwa. His object was to get the seed, and this took him seven hundred miles on foot through a wild uncivilised country. For three weeks he was tramping over native tracks and through jungle, sometimes up to his waist in an icy cold stream, and sometimes grinding up hill under a blazing hot sun. He was quite alone during the whole journey as far as European company is concerned, but, through good luck in getting a passport from the Hsipaw Sawbwa, he was generally treated with courtesy by the natives. He started along a road with a bullock waggon of provisions, &c., and attendants; then he went along accompanied only by an interpreter and a man who did the cooking; and when these ran away,—as they did, probably because they found the life too rough,—Mr. Wright was left to simply depend upon himself and his gun, shooting and cooking his own food and sleeping in the villages as best he could. He admits that the whole object of the journey was a failure, as though he saw a lot of splendid tea of the famous Manipuri jat, he could get no seed. It was, however, a great success from a sporting and exploring point of view. We understand he had some pretty large commissions in regard to the tea seed, and the sole reason why he could not get it was because he was there at the wrong time of the year, when the plants—some of them 20 feet high—were flowering.

After leaving Ceylon Mr. Wright went to the Straits and Java to have a look round. He proceeded to Batavia, and from there by steamer to Samarang and on to Soerabaya. Thence he went through the coffee district to see the coffee. He says he thought it very fine coffee. It suffers, he says, from all the diseases we have in Ceylon, but it is such a splendid soil that they do not seem to have the same effect, and the planters are able to struggle against them. Then Mr. Wright worked his way back overland by rail and whatever conveyances he could get, to Batavia, and from there he returned to Singapore, and went for a tour through the Malay States to see the country.

Then Mr. Wright went up to Burmah, with the object of going up into the Shan States and securing the wild tea seed he was after, which grows principally on the banks of the Upper Chindwin river and in the more Northern of the Shan States. He saw the tea at Pangnin. It was good Manipuri jat, dark leaf, the trees being about 12 feet high. They kept them down to about that height by chopping the tops off. There were some trees about 20 feet high. He was told, however, that he could get no seed because it was the wrong time of the year. He had been misinformed and had arrived in the flowering season. It was round Nansam that the finest tea was grown. It was 5,000 feet above the sea and very large quantities of tea were grown there. Whole hill sides were cultivated. Some of the bushes were good, but as a rule they were cut, and hacked about and spoiled for tea bearing purposes. It was all one jât, Manipuri, which is the wild tea of Burmah. From what he could see, if it were properly cultivated, it would be very good tea, and of very fine quality.

TRADE IN COFFEE.

Although by the publication of the stocks last Saturday the world's visible supply of coffee was shown to have decreased during December by 4,870 tons, owing mainly to a falling off in the Brazilian receipts, there does not appear to have been any corresponding decrease in the quantity put on the London market, heavy receipts and a corresponding decline in value being the chief features of the trade since the turn of the year. Moreover the assortment of qualities is of the most varied description, and probably the difference between extremes is at the present moment wider than ever. Unfortunately the demand is in no way commensurate with the supply, and this is a condition of things which shows no improvement as time progresses. It is many years, however, since such keen depression has been experienced as during the past twelve months. Ordinary qualities receded from 63s. to 40s., owing to the enormous receipts at Brazil ports, which presage a crop of over 9,500,000 bags. In the early part of last year low middling to middling realised 82s. to 95s., but these declined to 64s. and 76s., and East India showed a proportionate reduction. Brazilian sorts have been naturally most affected, and suffered a depreciation of nearly 50 per cent., good average Santos at the end of November falling as low as 26s., while good to fine coloury descriptions, which have been comparatively scarce, were least affected, and the margin between the values of fine and common is now exceedingly wide, ranging from 30s. to 105s. Since the practical extinction of the coffee crop and its extensive cultivation in Ceylon about a quarter of a century ago, the world's supplies to London have never regained their normal character in consisting largely of good, useful home-trade qualities of plantation growths at moderate prices; and pending the opening up of fresh sources of supply in Central America and other tropical parts—which by the utmost limit of production have at no time been able to make up for the virtual loss of the Ceylon description—the wholesale dealers in coffee have been put to all manner of shifts and inconveniences to prepare for consumers in the United Kingdom a sufficient quantity of this excellent beverage, without, however, succeeding in gaining for it increasing popularity. In vain have other coffee-growing countries tried to fill the place of Ceylon, for while Costa Rica, Guatemala, and other tracts of the Argentine territory have produced beautiful specimens of coloury sorts—familiarly known as "fancy" kinds among both dealers and exporters—the total weight of their respective crops at the outside has been only light; and although Brazil produces far more than the rest of the universe put together, the style, quality, and taste of her coffee is certainly not that suited to the requirements of the users in this country. The extension of cultivation in British East Africa, however, promises to provide a better supply of coloury coffee, shipments showing considerable expansion, while a moderate parcel has been placed on the London market from Fiji showing ordinary mixed quality. Buyers have in consequence acted very cautiously. The Costa Rica and Guatemala crops have been both fine in quality and abundant, but the forthcoming crops will be probably 20 per cent. to 25 per cent. less on account of drought. Columbian has been in better supply, and shows a great improvement in quality. One effect of the lower prices is to stimulate consumption, the European and American deliveries last year exceeding those of 1896 by some 75,000 tons, or fully 10 per cent. In spite of this, however, European stocks have increased over 90 per cent., and the world's visible supply on December 1 amounted to 374,870 tons, against 233,020 tons a year previous.—*Grocers' Journal*, Jan. 22.

VANILLA IN ZANZIBAR.

FRUITING VINES IN THE MWERA VALLEY.

Although there are many small patches of Vanilla growing on the island we never know till quite recently that Vanilla had ever flowered and fruited here. Vanilla *is* very popular here as

curiosity and an ornamental plant. Isolated vines can be seen in many shambas, both in Zanzibar and Pemba, trailing up coconut and mango trees. To Jack Savey of Dumbwi, Northwera Valley, belongs the credit of first having demonstrated that Vanilla not only grows in Zanzibar but flowers and bears fruit in due season. Jack Savey or Abdullah Brahim, as he is more correctly known among the natives, is an old ship's Krooman. He was attached to H.S. "Thetis," and was paid off when the "London" was first commissioned. He therefore carries us back to what to most of us is prehistoric times. In early life he spent fifteen years in Seychelles and learnt, among other things, to fertilize the flowers of Vanilla and to prepare the fruit. So when in his old age he settled down to enjoy the repose of country life in Zanzibar he planted some vines in his shamba. Today the vines tower above him in huge tangled clusters, threating to overwhelm his house.

Jack neither trained nor tended his charges but quietly bided his time till the flowers should come, when he deftly put in the fertilizing point. How many crops of fruit he has had is not clear, though it is more than one. Some of the pods we saw at the beginning of December were 7 inches long and had four or five months' growth before them. There is every promise therefore of good quality beans as far as size goes.

We have before pointed out that not until a plant has produced fruit can it be said that it has found a congenial home. There is always the after question whether the quality and quantity of fruit is sufficient for market purposes. The fruiting Vanilla in the wera Valley has, as if by an accident, cleared up one hitherto doubtful point about this product. Plantations may be put down with the reasonable certainty that they will in due course come to flower and fruit. If the industry were seriously taken up here we see no reason why Zanzibar should not in time become a large exporting country, and run in harness with Reunion and Seychelles.—*The Shamba.*

PLANTING NOTES FROM BADULLA: TEA AND FOOD STUFFS.

March 5.

One cannot help but think that the low price of our staple "Tea" must be pressing some planters a good deal; economy in field and factory must be the order of the day, to make ends meet. What a tale our different tea companies are telling this year compared with previous years in the way of dividends!! and I am very much mistaken if we have seen the worst yet. With exchange so high, and still going higher. And dear rice still continues although it is difficult to see why this last should be; the many Chetty rice dealers in Ceylon must have been making their pile ever since the slip on the railway at Allagalla. Prices went up then, not only for rice, but everything else in the way of food stuffs which our coolies and even ourselves require for our daily sustenance, and when they are likely to fall again is a problem difficult of solution. There is no reason whatever why a great proportion of the food stuffs which are daily consumed should not be grown by the labourers themselves, as a rule. In fact it is the exception to find coolies on an estate without sufficient space to grow vegetables, etc., but they seem to go about it in a half-hearted way, and evidently prefer paying the grasping kaddy-keeper his excessive prices.—*Cor.*

CHANGED TIMES IN TEA: HOW TO MEET THE NEW CONDITIONS.

In the happy days when the rupee was allowed to follow its bullion value; when there were no currency tinkers to interfere with the present or endanger the future; when the Indian mints were open, and Eastern trade was flourishing and prosperous,—the planters were every now and again reminded, as the London average for their teas grew less, that they were "living on Exchange." "What would we do, if it were to go agains us?" was the question the long-sighted ones put to themselves and others; but as there was no pressing call for an *immediate* answer, and as "short views of life"—Sydney Smith's philosophy of happiness—brings most content, the question remained unanswered, and it was a good time the planters had. Now the inevitable is upon us, and currency tinkering has given to the world the astonishing spectacle, of an Empire, with a dishonest coinage and statesmen who uphold it—this *today*, and in the face of all that history has taught!—and instead of "living on exchange," as had been so comfortably done in the past, the planters are now called on to face and answer the question "What is to be done now that Exchange rules against us?" The steadily-increasing stream of rupees, which a falling Exchange provided in such an easy way for the producer, is dried up, and instead of now living on Exchange there is the prospect ahead, of either going back to the primal condition of earning bread by the sweat of the face, or like the Polar bear, in *its* winter, to living on one's own fat! The former of the two alternatives is the better one, and it is evident that, among the planters, there is a buckling to, and a determination to make the most of things, in the hints which have appeared in the public prints as to the crying necessity of careful and cheap working, and a general alertness in regard to all estate matters. As the margin of profit grows less and less, the room for "playing the fool" without being found out, is circumscribed; and to show well after a year's working, now that things are cut fine, will demand the prominence of qualities which were only secondary when the majority were able to live well on Exchange.

Prominence has been given to the cost of plucking and calculations have been made to show how Tea Companies and private proprietors would benefit, if, instead of day wages, there were payment by results. To reduce the cost of plucking from 8 cents to 6½ cents, is, it is said, quite within the reach of planters if there be combination among themselves, and contract plucking be insisted on. Those who advocate the new order, have tempting figures to offer as an inducement to follow it. Those who are against it, have a dread of coarse leaf, a lowering of the qualities of teas, and a further run down of prices. Quality, quality, quality, is what they emphasise, and to pluck fine is but another name for high cost. Cash pluckings on estates, whether it be on Saturday or Sunday, are we are told, always a bother; for although the quantity harvested may be excessive and the average per cooly something handsome, it has often to be gone over again to gather out the hard and coarse, and the trees frequently suffer from indiscriminate stripping. Cost of plucking must always be subject to the kind of tea aimed at; for, a fine tea is more expensive to gather than a medium quality. Still, whatever kind may be desired, to be able to produce it at the lowest cost is what should be the aim of all; for now that we are not living on exchange, and we have before us the prospect in the near future, of a considerable

increase of our total out-turn, to work cheaply will be an essential to profitable working, and in some cases to existence. If contract plucking is to be the salvation of some estates, and the gilt edging of others, there can, of course, be no reason why it should not be carried out. But, as things are at present, where, below a certain average, a full name is not given we have contract-plucking now in force, and the question is simply this, has the average demanded not been placed too low? What coolies can do when working for cash,—or as is often done, a name for a certain quantity, and money for the surplus,—should open the eyes of most men, and the piece work, with its resulting higher wage is an appeal which Ramasami will not be able to withstand. It may take a little time before our estate labour force will pluck exactly as desired, and to the planter there would be at first a great deal of worry, and a call for alert attention: but that this could be overcome and that ere very long and without much friction either, we certainly believe. It would be folly of course to look for all the advantages of contract plucking to be secured just at once, but even a cent a lb. saved is something, and then to go on to further conquests. To judge yb a cash scramble of the quality of leaf which regular contract plucking would result in, is about as fair as to compare the scurry of a belated weeding contractor in dread of a fine, and the work thus produced, with the carefulness manifested when the contract is well in hand. But on the whole, our conclusion after full consideration and reading and listening to the opinions of many planters, is that "contract plucking" is for the low country where quantity, rather than quality, is the *desideratum.*

The call for economical working is only muttering as yet; but it seems likely to increase in volume and imperativeness. At every point of an estate's outlay there will require to be careful thought and keen economy. It is the cents which will have to be taken care of, and all over the manifold daily workings of tea properties, there must brood the watchful eye, and a nervous determination to see that each individual labourer does his day's work, and that carefully and well. With dwindling dividends, there is sure to come the cry of change of management (and perhaps of Directorate!); for, without dividends, Companies have no call to be. As an rmy is said to march on its stomach, so the sweet reasonableness of public Companies only lasts as long as dividend warrants are regularly received. When the Manager and Directors fail, repeatedly, to produce these, there must be a rough time in store. Ceylon planters have for some time back had easy times. When an estate was good, and there was exchange to live on, slack management and nominal oversight were not noticed much; but now that a dishonest rupee has to be wrestled with, as well as low prices and an increasing output, the conditions are wholly changed; and only to those who recognise this fact, and set themselves manfully meet it, will there be a due reward.

PERADENIYA GARDENS AND CAMBRIDGE.

On 25th January Mr. Pearson, B.A., of Christ's College, Cambridge, who was recently in Ceylon for the purpose of Botanical Research, read a paper before the Botanical Club on the Peradeniya Gardens which was illustrated by fine photographs. Professor Marshall Ward was present and took a part in the discussion that followed; the question was gravely propounded "why do more coconuts fall in the night than in the day," and it was suggested that the explanation was to be found in the fact that the stem and stalk were fuller of sap, because the leaves retained their moisture during the night, while they give it off freely during the day. Mr. Pearson would like to know whether it *is* an acknowledged fact in Ceylon and elsewhere, that nuts *do* fall more in the night than during the day. Perhaps coconut planters will be able to speak with authority. Mr. Pearson has not yet received the botanical specimens in methylated spirits that he had collected, which shippers have fought shy of; but hears they are now on their way home, so nothing can be heard at present of his researches in reference to the patana grasses of Ceylon.

THE EFFECTS OF FIRE ON GRAZING AND THE PRODUCTION OF GRASS.

Forest officers in their endeavour to extend fire conservancy, consantly find the objection put forward that fire protection will interfere with grazing. There is among agricultural people a firmly rooted conviction, which is not confined to natives of this country, that burning off the dead grass that remains at the close of the autumn or in early spring, is a neces ary condition for a good crop of grass. It is said that burning not only causes the grass to spring earlier and yield a more luxuriant crop, but, also destroys a vast number of ticks and other insects, which if unchecked, would render grazing an impossibility.

On the other hand, it is asserted by Forest officers that the annual fires, though they may stimulate the grass to earlier growth, have the effect of killing out the better kinds and leaving only the coarser varieties which cannot be eaten by cattle except when they are quite young. That this is the case and that constant burning must necessarily cause deterioration of the soil, seems almost self evident, but in the absence of recorded facts it is often difficult to convince people who hold opposite views. It is hoped therefore that those who are in a position to do so will take the matter up and give the readers of the "Indian Forester" an account of the precise effect on the grazing or grass supply, of any protective measures with which they have been concerned. I have heard it stated that in many cases where fire protection has been for many years the rule, the grass supply has been so obviously improved that neighbouring landhoders have come to recognize the value of such measures and have taken to fire-protecting their own forest lands, but I cannot find any reports in which such facts are officially recorded.

Another point in which information is desirable, is whether fire protection alone is sufficient to improve the crop in areas set apart for the production of grass, and if so how many years it takes to obtain the desired results. So far, my own experience has been that where rank grasses have once thoroughly established themselves, protection alone, unaccompanied by heavy cutting or grazing, only causes such grasses to grow more luxuriantly and that the finer kinds do not re-assert themselves. This, of course, applies only to bona-fide grass lands; in areas under forest, the young trees which naturally come up as a rule kill out the tall grasses, but I heard it stated that this is not the case in chir forests, in which fire protection is said to stimulate the production of coarser and ranker grasses.—"X" in *Indian Forester* for February 1898.

THE DEVELOPMENT OF THE COCONUT INDUSTRY.

When reading the paragraph on Coconuts, in the Notes on Economic Products in Mr. Willis's Administration Report for last year, it struck us that the language used might be misunderstood, if indeed it was not itself due to a misapprehension of the figures quoted. Our legal contemporary has been the first to trip in considering the export statistics on which the Director of the Botanic Gardens commented. Our fear was that the official comments,—as indeed those in the case of Cacao as well,—might lead to the impression that the exports show an uninterrupted advance. Of Cacao, for instance, Mr. Willis writes:—"The Exports continue to increase steadily, being 34,503 as against 31,366 cwt. in 1896." The increase last year as compared with the previous year is beyond question; but a steady increase can scarcely be predicated of the product which in 1893 showed much larger exports than in the two following years, and which has shown the fluctuating tendency which characterised Coffee after it had passed its meridian, when a heavy outturn was generally followed by a short crop. The remarks on Coconuts again may possibly suggest to the unwary the progressive increase of exports—the comparis n of 1897 with 1896 being held to reflect the general increase from year to year. Careful examination of the figures for any decennial period will show fluctuations in every product of the Coconut palm, save the Desiccated Kernel in which there has been a steady annual increase since the industry was started, if we exclude the single year 1894, when there was a slight decrease as compared with 1893. That was due, as we explained at the time, to the Mills having worked short time for a few months, either owing to orders from home having slackened temporarily, or with a view to discourage would-be producers who were contemplating erecting small Desiccating Mills throughout the country. There may be—there probably has been for years—a steady increase in the Coconut crops of the Island, the produce of the area coming into bearing being more than sufficient to make good any shortage through bad seasons in particular districts; but all the same, our Export tables—and it is on these Mr. Willis bases his remarks—do not show that progressive increase which we all desire, and which our contemporary of the local "Examiner" has assumed. In referring to the decrease in the export of Nuts in 1897 as compared with 1896, he rightly says it is insignificant, and is more than compensated for by the increase in the quantity of Oil and Desiccated Kernel; but we cannot accept this increase as a reason for the decrease. That would imply that we sent away all that we could spare. We should think the island would have been able to ship double the number of Nuts it did, if only there was a demand. The quantity of Nuts shipped is regulated by orders from Europe (chiefly) and by the cheap freight which may be available, rather than by the outturn of our Coconut-groves. As we pointed out in our article on the Export Statistics of last year, in our issue of 11th January, the Coconut Oil exported in 1897 represented only a fair average quantity, for while it exceeded the exports of the two previous years, it fell short of the quantity for 1894, and was far short of that for 1892, when 550,977 cwt. were exported. That quantity represented a total of 275,488,500 nuts; and adding to that, the numbers represented by Desiccated and husked Nuts, we have close on 300,000,000 Nuts for 1892; whereas our Exports last year represent about 40 to 50 million Nuts less. There has not been any falling-off in production; nor were the exports restricted by increased local consumption. The demand for Oil has been slack, and that doubtless stimulated local consumption. Without a better demand for Oil, in the future, the supply of Nuts is likely to outstrip the demand. Then, the local "Examiner" is mistaken as regards Coir. The Exports last year were far in excess of those for 1896, and Mr. Willis has had no monopoly in the statistics for 1897. They have been available to the public from the first week in January, and have been freely discussed and commented on ever since.

PLANTING NOTES FROM KALUTARA.

Neboda, March 8.

We seem to be fairly over the "droughty" season which has let us down lightly in comparison with previous years; for I have known in byegone hot seasons quite a month's dry weather at this time of year; whereas this season we have scarcely had 12 days dry. But then our N.-E. monsoon (October-November) was a total failure and fortunately few believe in this monsoon for planting.

The newest (though not so new in this part of the world) of new products is Hevea Braziliensis (Para rubber) which promises well from all accounts and fortunate are the lucky ones who have seed to sell.

There are not *nearly* the *quantity* of seeds growing which are reported; owing to damage done by porcupines, hares, cattle (especially) and weeders and I doubt if a quarter of the seed sold from various gardens ever grows owing to these causes. It seems regrettable to me that the Government should have taken up the rôle of "seedsman and florist" in connection with the sale of Para rubber seeds. I could quite understand it if the revenue of the Premier Crown colony was in danger of extermination from the collapse of our *staple product.* However, I hope, that Mr. Willis's Department will get the full benefit of the sales and that in future Reports (if this is to be the Government policy) we shall hear no more of cattle running wild in the Botanic Gardens and damaging valuable plants and all for the want of a few yards of wire fencing!

THE HOT SEASON IN CEYLON AND SUMMER IN AUSTRALIA RABBIT AND INSECT PLAGUES.

(*Communicated.*)

THE beginning of the hot and trying season (from middle of February till towards the end of May) has again came round, and no doubt many of us who from business pressure or official duties are unable to leave the low-country (from altitude 2,500 ft. to sea level) for "the hills,"—4,000 feet and upwards—will be forced to give a thought to the unfairness or inequality of our climate and to the advantages of living in countries not styled the tro-

pics, where we are apt to think a cool and invigorating atmosphere can always be shared equally by all. Though Ceylon is as tropical geographically as it pretty well can be, yet we doubt very much whether if given the choice we should not prefer its climate generally to that which the Australian colonies have been experiencing during the last two or three months according to recent news received from there. Here in Ceylon, at our hottest stations the maximum shade temperature seldom if ever exceeds 95° Fah.; there it seems to reach as high as 125° or more, 110° being evidently looked upon as only an ordinary day temperature in summer.* Our annual rainfall (not counting the Northern Provinces) is anything between 50 and 200 inches: whilst at Adelaide the total rainfall recorded for 1897 was only 15 inches and some odds. This scarcity of rain together with the recent heat wave have inevitably rendered everything of the nature of scrub and grass extremely inflammable. Consequently bush fires followed, as generally occurs at this season, but this time it seems with more appalling effect than usual. Whole countrysides, it is said, are to be seen in flames for days, felling forests, devastating farms and settlements, schools, churches, etc., involving the loss of human lives as well as great numbers of stock of all kinds. An escape from the omnipresent fires seems and sometimes is, impossible, and tragic and melancholy are indeed many of the incidents related regarding the circumstances. Though New Zealand, Tasmania, and New South Wales have all suffered severely from the devastation caused by these apparently spontaneous fires, Victoria seems to have the largest areas affected, the severest form of the calamity being felt in the districts known as the Gippsland, "the Garden of Victoria." It is, however, the position of the individuals affected that command the greatest sympathy. Flourishing settlements, the scenes of many years of arduous toil, have according to the *Melbourne Leader* been wiped out of existence, leaving hundreds of families homeless; and over large areas "there is now neither food for the cattle nor, in many instances, catte to eat the food if there were any remaining."

Over Southern Australia generally the season which is now coming to a close seems to be reckoned as more than usually unfavourable to farmers and fruit-growers. The rabbit pest is still a question of serious difficulty, notwithstanding the handsome rewards offered for the discovery of a successful and satisfactory method of diminishing it. Poisoned water and phosphorised food are, at the request of the Government, being tried as the latest remedial measures; but to these farmers especially have serious objections.

The San Jose scale recently introduced, it is alleged, with nursery stock from California is also causing no small anxiety and trouble in agricultural districts. A greater nuisance than this however seems to be the grasshopper plague, which consists, it is said, of several species, "all numerous and all hungry." They are so thick that "they can be taken up in shovel-fulls," and in places so numerous that "it is with great difficulty the trains are able to get up the inclines on the Railway line." At one place they have "killed an avenue of 2-year old pines and are now attacking pine trees that have been planted for 20 years."

* The dry climate and cloudless skies seem to make a difference; for as Pat said when reminded he was working in the field with the thermometer at 110 in the shade,—"Och, shure the thermometer has no effect on the heat in this land!" (South Australia.)—Ed. *T.A.*

THE CACAO "TROUBLE" IN CEYLON.

A gentleman acquainted with cacao cultivation in the West Indies and interested in the welfare of Ceylon, writes:—

"I hope the disease in the cacao trees will be found not of a serious character. Cultural efforts promise the best results. There is apparently nothing more in Ceylon than appears now and then in the extensive cacao districts of the New World. Good draining and thorough sweetening of the soil by the use of lime and replanting with strong plants should bring things round."

This is very much the counsel given by Messrs. Willis and Green; but planters object that the trouble is present and persistent in what has been, for years, well-cultivated well-drained land, and where lime does not seem to be required. We have confidence that if anything of aspecial nature, can be done to combat the fungus, Mr. Carruthers will be able by-and-bye to advise judiciously.

"PLANTING IN SANTO DOMINGO."

Our monthly periodical brings us into contact with all parts of the tropical and sub-tropical world. It is a link binding Ceylon not only to every British dependency cultivating tropical products, but also to a variety of countries outside the circle altogether of Queen's Victoria's rule. Our latest communication is from a subscriber who, as Engineer and Planter, is hard at work in the Republic of Santo Domingo, the Eastern half of the island of Haiti, with an area of 18,045 square miles—three-fourths of Ceylon—and a population rising to 700,000. From the "Statesman's Year Book" we quote as follows:—

Of the total area, about 15,500 square miles is cultivable. Tobacco culture is declining, while the production of coffee, cocoa, and bananas, as well as of cane-sugar is on the increase; some attention has recently been given to cattle-raising and dairy produce; the principal industries are connected with agriculture and forestry. Large sugar plantations and factories are in full work in the south and west of the Republic. Iron, gold, copper, coal, salt, and other minerals are found, but there is no mining industry.

The chief articles of export and the quantities in 1894 were:—Coffee, 860,000 lb.; cocoa, 426,000 lb; sugar, 20,000,000 lb.; logwood, 512,000 lb.; lignum vitæ, 2,860,000 lb. The imports consist of cotton goods, hardware, earthenware, breadstuffs, &c.

Now for our correspondent M. Bogaert, who writes from Santiago, under date 15th January, as follows:—

I am very satisfied with your magazine that was recommended to me by a gentleman of Trinidad, and as I am a coffee and cacao planter I don't think it would be possible to find one more useful and interesting for me. Allow me to answer several questions of your referendum: how to economise the available labour supply:—

3. Only Company's estates can afford the expenses of steam and electrical tramway transport. I think that a well macadamised road of 10 to 12 feet width and with gradients under 7 to 8 per cent will do better for single planters. They cost me only 30s the 100 meters.

5. I have tried all systems and finally came to this one which gave me excellent results. I made an allowance of 25s per acre and per year; the profits on this sum are divided with my native foreman who is allowed to treat the weeding of parcels of 3 to 10 acres with his native people. Every sixth month we settle. This system brought me the weeding-cost down to 22s—the foreman's part inclusive—and my books show me a constant decrease of the cost. It must be understood that the price of labour is here 1sh, a day.

Although selected weeding may be good to struggle against certain rapid seeding weeds, I think that an advised planter, if by any accident he sees his estate

invaded by the weeds, will take the bull by his horns and make six three-weekly weedings, and after that he can rest and go over to monthly cheap weeding.

10-11. I think it is necessary to stimulate the needs of our working people putting them in the "boutiques," "tundus" or shops useful goods before the eyes, so they acquire slowly the notion of civilised life; but I cannot condemn hardly enough the sell of "aquardiente," arrack, "pulque," etc., etc,—which is the source of all crimes of the natives and too, a source of difficulties between the planter and drunken labourers.

I saw in your magazine Mr. Green's suggestion to graft Caraccas cacao on Forestero. Has this been realized, and if so, please be so kind to indicate to me the manner it has been done.—ED. BOGAERT, C. E., and Planter.

Mr. Bogaerts appears to be well off for labour which costs no more than 1s a day. We have not heard of any successful grafting being carried out as yet of Caraccas on Forestero cacao in Ceylon; but if such has been the case will hope to learn, with results, in answer to the present enquiry. We should be glad to hear from Mr. Bogaerts as to the prospects of Planting in San Domingo and how the staples pay as compared with the rest of the West Indies.

BUYING CATTLE IN INDIA.

MR. STURGESS AT BOMBAY AND KURRACHEE.

Mr. G. W. Sturgess, the Veterinary Surgeon of the Ceylon Government, returned from Kurrachee on 12th March after an absence in India of nearly a month. He went from Colombo by the M. M. ss. "Laos" to Bombay, starting on the 14th and landing on the 17th. Feb. Everything in that city, he said, seemed to be in confusion: he stayed at the Esplanade hotel and there and every where he went there were evidences of precautions against plague, disinfectants of various kinds been freely used. At the Esplanade-hotel he found M. Ruinat, of the M. M. Company, residing: he was in good health and spirits. Mr. Sturgess saw funerals in Bombay, "one after the other" and the whole town

SEEMED UNDER A CLOUD.

He left on the 18th for Kurrachee in the B. I. ss. "Dunera" and on board that vessel were 600 natives, who had been to Bombay to witness the departure for Europe of Aghakhan, a Persian prince. The natives (Mahommedans) were returning to Kurrachee and on arrival there the boat was boarded by six doctors (four male and two female), who examined every one on board,

WHETHER NATIVE OR EUROPEAN.

The result was that ten passengers were sent back (five men and five women), their temperature being too high. They were suspected cases only and there was no actual plague on board. All the natives were quarantined at Kurrachee, but the same rule did not apply to Europeans, who were allowed to land. Arrived at Kurrachee Mr. Sturgess set about selecting cattle and for that purpose visited the principal villages and settlements within ten miles of the town. For this purpose he secured by hire a Kurrachee police camel. The cattle in the district were not in as good a state as they were last year, one of the results of the famine, but prices were about the same. In the district around Kurrachee there were no traces of plague and the effects of the famine were not very apparent. Mr. Sturgess secured his cows (32 in number) at 60 rupees each and also brought a bull, all being of the Scinde breed He shipped them on board the ss. "Independent," which came direct to Colombo so saving the cost and risk of transhipment: and had a pleasant voyage home, until Cape Cormorin was seen, when the roll of the north-east monsoon produced a motion in the vessel not very pleasant. However the cattle were none the worse when they reached Colombo, none being lost on the way, and they were driven yesterday afternoon to the Government Dairy in good health. By the same vessel there arrived

FIVE HUNDRED SHEEP

which have been brought to Ceylon as an experiment in trading by an Indian merchant. The sheep are of the Scinde breed, black-faced and long-woolled. They cost in Kurrachee about R5 per head but it is understood that they will realise R10 here. They were landed in good condition.

Whilst at Bombay Mr. Sturgess visited the Veterinary College, where there are seventy students studying for veterinary degrees. Amongst them is one from Ceylon, Mr. Chinniah, who is reported to be doing very well. There are near the College splendid wards for sick cattle. Many of them were given by wealthy Parsees, and there is also on the premises a laboratory which is at the present time being used for plague inoculation.

A correspondent adds:—"The herd consisted of 32 cows (14 with calves) and a bull. Most of the cows are young animals, and it is to be hoped they will be found to be good milkers as the milk supply of the dairy is just now short of the demand from the hospitals."

RAMIE FIBRE.

In the course of an interview with Mr. Kershaw, who is visiting the Australian colonies with a view to opening up a trade in certain cotton thread fabrics, of which he is an extensive manufacturer in Manchester, the subject of fibre plants other than cotton was introduced. With regard to cotton, Mr. Kershaw said that it certainly would not pay to grow cotton in Australia for shipment to the home markets. The American grower got from 4 to 4½ cents (2d to 2¼d) per lb for his cotton. But it was not so much the fibre that paid the farmer as the by-products, such as cotton seed oil, oil cake, &c. These were worth more than the cotton itself. Speaking of other fibres, he said he did not profess to be an expert in Sisal hemp, but the demand for it was very great—in fact, almost unlimited. The quotation in the home markets of £40 per ton, he said, should yield a very handsome profit even if the working expenses and charges amounted to fifty per cent. If one ton of clean hemp is obtained per acre then, at even £12 per ton, it should pay well. On, the subject of jute and ramie, Mr. Kershaw was more emphatic. There is absolutely no limit, he said, to the market for ramie fibre. It was in every way superior to jute, and whilst the finer silk-like fabrics of jute, can be distinguished from pure silk, it is almost impossible to do so in the case of ramie fabrics. As to the price quoted—£30 per ton for clean fibre that was absurd. £30 per ton meant about 3¼d per lb.; whilst the fibre commanded at least 6d per lb. in the open market, or £56 per ton. The improved machinery would even have the effect of increasing the price. Ramie was a fibre which lent itself to the most delicate fabrics, as well as to the coarser ones. From his knowledge of the trade, and from what he had learnt whilst in the colonies on the subject of the adaptability of the soil and climate of New South Wales and Queensland to the cultivation of the plant, he came to the conclusion that it was eminently worthy of attention—*Queensland Agricultural Journal*, Feb.

Royal Gardens, "Kew Bulletin" of Miscellaneous Information for November 1897, has just reached us. Its contents :—"West India Royal Commisson ; Micellaneous Notes ; Mr. J. H. Holland ; Mr W. Scott ; M lpighi Celebration ; Botanical Magazine ; Hop Hornbeam ; Tropical Fern House ; Nepenthes House ; Durian in the West Indies ; Lily Culture in Natal." The first article contains a great deal of very interesting information referring to the West India Islands visited and reported on. That of DOMINICA, administered by Mr. Philip Templer, is perhaps the most interesting to us. About it we read as follows :-

It is with the development of the other industries that the Colony will be mainly concerned in future. In this direction there is not only very good ground for hope, but considerable progress has already been made. The value of the exports of cocoa have risen from £6,375 in 1882, to £13,453 in 1896 ; of limes and lime juice from £5,102 to £14,851 ; of essential oils from £295 to £5,012 ; of fruit and vegetables from £607 to £1,348 ; and of c ffee from £321 to £967 in the same period.

But this is not enough. If Dominica is to be self-supporting, if an efficient Government is to be provided for out of its revenue, and the people are to be prosperous, or even comfortable, these industries must extend still further ; and there is happily, no reason why this should not be the case.

The great extent of the cultivable area of Crown lands has already been noticed. These lands are undeveloped ; they are mostly covered with timber, much of which is said to be valuable. Care no doubt, ought to be taken not to create increased risks of land-slips or floods by allowing too much of the highest lands to be deforested, for the rainfall in Dominica is heavy ; but even allowing for the utmost caution in this respect, there is a great extent of land, especially in Layou and Sara flats, which may be cleared and cultivated. The soils of much of this is believed to be very rich and fertile, and the appearance of such patches as have been cultivated confirms the probability of its being so.

Some of this land ought to be disposed of under proper regulations to peasant cultivators, and some of it may prove attractive to investors of capital or persons who are in a position to occupy and cultivate estates of their own. The Government of the Colony will have to be guided by circumstances in the disposal of it ; it is not possible, under present conditions to say what opportunities will arise which may lead to its being occupied and cultivated. At the time of our visit all sale of Crown lands had been temporarily suspended owing to negotiations which were then pending for a large concession to a Company. We believe these negotiations have fallen through, but in any case the sale of Crown lands to cultivators in the suitable localities ought to be resumed.

* * * * *

There is enough labour in Dominica for its present industries, but it is to be hoped that these industries, will increase, and, if so, their needs will soon outgrow the capacity of the present labour supply. By the time, however, that this takes place there will, we fear, be only too many persons in other islands in want of employment, and it should be easy to import many labourers from them.

* * * * *

The present condition of Dominica is certainly one of depression, and it will need assistance from the Imperial Governm nt. This may be given as part of a general scheme for subsidised steam communication between the islands, and of a special scheme for opening direct communication between St. Vincent, Dominca, and New York.

Dominica will also share in any assistance which may be given to the system of botanic institutions in the West Indies. In addition to this the island should have some assistance from Imperial funds for making roads, which are essential to its progress. Such help need not be very costly, and need not be grudged, since Dominica may, if such assistance is given, be expected to attain a state of comfort, or even prosperity, and its capabilities and prospects are decidedly better than those of any other of the Leeward islands.

Here again is a most important chapter, full of warning to Ceylon as well as to any part of the West Indies :—

DANGER OF DEPENDING ON A SINGLE INDUSTRY.

The recommendations involving expenditure by the mother country, which we have considered it our duty to make, are based primarily on the present and prospective depression of the sugar industry in the West Indies, but they are of such a nature that they should, in our opinion, be carried out even if the sugar industry were restored, temporarily, to a condition of prosperity.

It is never satisfactory for any country to be entirely dependent upon one industry. Such a position is, from the very nature of the case, more or less precarious, and must in the case of the West Indies result in a preponderating influence in one direction tending to restrict development in other ways.

The representatives of the sugar industry in the West Indies have had special means of influencing the Governments of the different Colonies, and of putting pressure on the home Government to secure attention to their views and wishes. Their interests have been to a very great extent limited to the sugar industry, and they have seldom turned their attention to any other cultivation except when the sugar industry ceased to be profitable. The settlement of the labouring population on the land, and the encouragement of the products and forms of cultivation suitable for a class of peasant proprietors formed no part of their policy ; such measures were generally believed to be opposed to their interests, which they regarded, no doubt, as identical with the best interests of the community, and in, at least, some of the Colonies met with opposition at their hands. If a different policy had found favour, the condition of the West Indies might have been much less serious than it is at present in view of the probable failure of the sugar industry.

The general statement regarding the danger of depending on a single industry applies with very special force to the dependence of the West Indian Colonies upon the sugar industry, for the cultivation of sugar collects together a larger number of people upon the land than can be employed or supported in the same area by any other form of cultivation. In addition to this it also unfits the people, or at any rate gives them no training, for the management or cultivation of the soil for any other purpose than that of growing sugar cane. The failure, therefore, of a sugar estate not only leaves destitute a larger number of labourers than can be supported upon the land in other ways, but leaves them also without either the knowledge, skill, or habits requisite for making a good use of the land. In those Colonies where the sugar industry cannot be carried on without imported coolie labour the position of dependence upon this one industry is still more dangerous. In these cases not only is there a yearly charge upon the public revenue to meet the cost of immigration, but a liability for back passages is incurred, which a failure of the industry would leave the Colony without funds to meet.

Whilst, therefore, the vital importance of the sugar industry to the present prosperity of nearly all the Colonies is beyond dispute, we wish to observe that so long as they remain dependent upon sugar their position can never be sound or secure. It has become a commonplace of criticism to remark upon the perpetual recurrence of crisis in the West Indian Colonies, and we submit that the repeated occurrence of such crisis, as well as the fact that the present crisis is more ominous than any of the previous ones, illustrates the danger to which we have referred, and adds much force to our recommendations for the adoption of special measures to facilitate the introduction of other industries.

LABOUR FEDERATION AND COAST ADVANCES IN CEYLON.

Report of the Joint Committee of the Ceylon Chamber of Commerce and the Planters' Association of Ceylon appointed to consider the question of Coast Advances to Estates Kanganies and Coolies with a view to their reduction.

The Joint Committee of the Chambor of Commerce and the Planters' of Ceylon have received the following replies to their recommedations, viz.:—11 replies from Colombo Agency Firms, 16 from District Associations, and 4 from Managers of Companies. Of these 25 were in favour of recommendation (*a*), and 3 against it; 27 in favour of (*b*), and 3 against; 28 in favour of (*c*), and 1 against; 13 in favour of (*d*), and 13 against, 25 in favour of (*e*), and 4 against.

The Joint Committee finally recommend the adoption of the following resolutions:—

(*a*) To make Coast Advances a matter of yearly settlement, this not implying that outstanding advances can in all cases be fully recovered, but that on all Estates there be a yearly reckoning and adjustment of advances as between Estates and Kanganies and Coolies.

(*b*) To adopt a system of Monthly Payment of Coolie wages within say 35 to 40 days, and in any events to make payments every two months.

(*c*) To send advances direct to the Coast as far as possible, and to consult the convenience of the previous employer before taking on any local labour.

The Committee would further suggest the desirability of recovering a certain proportion of advances each pay day when practicable.

The Committee have advisedly omitted recommendations (*d*) and (*e*), the former because it has been disapproved of; the latter because, on full consideration, it appears to the Committee inadvisable to continue a suggestion which seems to approve of the interference of the executive with the Police Magistrate.

The Committee, in conclusion, would, in the interest of all concerned, recommend these resolutions to all Resident Proprietors and Superintendents; and would urge upon Agency Firms and Managers of Companies to assist, so far as lies in their power, in carrying them out, as the Committee are of opinion that, in many instances, it lies to a great extent with them to give practical effect to the Committee's suggestions.

Resolved:—"That the rules of the proposed Federation, and the accompanying memorandum of the Joint Committee *re* coast advances be printed, and copies sent to the Hon. Secretary of every District Association for distribution to all planters in the respective districts with a request that each planter be invited to enroll himself as a member of the Federation."

MEXICO AND ITS DEVELOPMENT BY CEYLON PLANTERS.

One result of the establishment of an artificial, dishonest rupee in India and Ceylon has, undoubtedly, been to send capitalists hitherto interested in the East, to seek investments in "silver" countries of the Far West. Messrs. H. K. Rutherford, G. A. Talbot, and other gentlemen well-known in Ceylon have given attention to Brazil and invested freely in extensive coffee property there; Mr. Huntly Thring, Mr. J. L. Shand, Mr. R. P. Macfarlane and others have made an investment in Costa Rica; and now an influential Syndicate of Ceylon men have—according to our London Correspondent—completed the purchase of coffee property in Mexico. It is well that these facts, and many more similar to them, should be brought under the notice of Mr Chamberlain and Lord George Hamilton to give them ome idea of what India and Ceylon have lost, and are losing, through the transfer of capital and planting enterprise to America, which would surely have been given to the East had the Currency not been tampered with.

Of all American lands, it is likely that Mexico will prove the most attractive from this time onwards to our planters and capitalists. It has made wonderful strides in progress during the past twenty years under President Diaz—a born ruler of men, a firm and wise administrator. A generation ago, scarcely a road in Mexico was safe from banditti, who robbed and murdered with impunity. Now order and justice everywhere prevail, and as a London contemporary puts it:—"today, great railways, connected with the American trunk lines, traverse the country, thousands of tourists from the United States make the spring excursions to Mexico to enjoy a bracing climate and a life more picturesque in incident and colour than more northern climes afford, and travel in every part is—by the admission of Americans—more secure than in some of the South-Western States and Territories of the Union." Then how few of us realize what a great country Mexico is with its 767,000 square miles (equal to thirty Ceylon's), magnificent climate on the extensive plateaux, enormous mineral wealth and rich agricultural regions. *Two-thirds of the whole silver stock of the world* —says the *Spectator*—has come from Mexican Mines; and at present general prosperity prevails with cheap living in view of a plentiful silver currrency.

Of course we, in Ceylon, are most interested in the planting development of certain Mexican districts. Our Correspondent, Mr. W. J. Forsyth (formerly of Maturatta and Uva) has kept the readers of the *Observer* and *Tropical Agriculturist* for a long series of years back, fairly well acquainted with the coffee planting enterprise of Guatemala and Western Mexico; and later Mr. Laing Malcomson (who was also for a short time in Ceylon) has appeared in London as a promoter of investments in Mexico. Very wisely, the gentlemen who turned their attention to coffee in Mexico sent out trustworthy agents of their own in Messrs. Naftel, Clark, Fort, &c. and as a consequence "Tapia" estate in Cordoba district has been purchased. Of this investment we are sure to have some information later on. Meantime, we are a good deal to blame for neglecting to notice before now a very interesting practical book on "Mexico, its Progress and Commercial Possibilities" by Mr. E. J. Howell, F.S.S., kindly handed to us by Mr. W. S. Saunders on his return some time ago from England. We are told how Mexico embraces every climate from the temperate to the tropical, and how, with the exception of a narrow border of sea-coast, it is a lofty table-land between two oceans, rising to 4,000 and even 8,000 feet above sea-level, having therefore hot, temperate and cold zones and divisions. We must not on the present occasion do more than refer to the chapters referring to the sub-tropical products—coffee, cacao and rubber—in which we are most interested; and we cannot do better than quote as follows from our author:—

COFFEE.—If there is one product for which Mexico offers the best conditions for its perfect growth, in the matter of soil, climate, and altitude, it is coffee. Experience has proved that the best flavoured and heaviest coffee is produced by these conditions, together with a proper cultivation and preparation (or curing) for the market. All the coast States of Southern Mexico, of both the Gulf and the Pacific Coast, have excellent soil and climate for the growing

of coffee. Coffee is raised principally in the States of Chiapas, Vera Cruz, Morelos, Oaxaca, Michoacan, and Colima, and can be grown in several others, while portions of Colima, Michoacan, and Chiapas, have perhaps the best conditions for successful culture. The coffee of Uruapam (Michoacan) is celebrated, and is considered by connoisseurs to be finer than Brazilian coffee. The exports to the United States of this bean, during the fiscal year of 1887-88 amounted to $2,117,299. The total exports for the year 1888-89 were valued at $3,886,034. The rapid growth of the industry may be seen by noting the exports of the last few years:—

1887-8	$2,431,025
1888-9	3,886,034
1889-90	4,811,000
1890-1	6,149,808

Of this last amount the United States took $3,542,851, whilst a very small amount was sent to England. The enormous increase in production during the last ten years indicates a corresponding growth of prosperity, as, whilst the expenses of cultivation are small, the profits are large.

The price of land suitable for coffee plantations is low, and may be purchased over a large area. The prices for suitable first-class land are:—

The State of Vera Cruz	..	$1·13 per acre.
,, ,, Colima	..	0·90 ,,
,, ,, Michoacan	..	0·90 ,,
,, ,, Chiapas	..	0.62 ,,
,, ,, Oaxaca	..	0·44

Two companies, one English and one American, have lately been established to cultivate coffee in the State of Oaxaca. In Chiapas the landed proprietors are increasing their coffee plantations, and have organised an association for protecting this industry. In the district of Soconusco in this State, there are now 26 Coffee plantations, which employ 1,520 men. The owner of one of these plantations states that there are sufficient coffee lands in that district still unoccupied to produce at least 200,000 quintals of 100 lb. each of the berry. The cost of growing would not exceed $5 per quintal, or 5 cents per lb. packed in sacks and ready for transportation and as it finds a quick sale at the plantation at 20 cents, there is a profit of 15 cents per lb. at present in this industry. The coffee tree begins to yield the third year, but is not generally in full bearing until the fifth. The cost of the early cultivation is often covered by planting bananas between the rows, which forms a shelter for the young trees during their growth, and more than covers all the expenses of the plantation. as this fruit commences to yield the first year after planting.

Concerning coffee culture in Mexico, the following data is taken from a book entitled "Coffee Culture on the Southern Coast of the State of Chiapas," published by Senor Don Matias Romero, in the City of Mexico, August 1875: "The cost of each coffee tree, four years after planting, including value of public land and wages, at the rate paid then in Soconusco is about 11 cents per tree. The yield of each tree in its fouth year is two pounds of coffee, which, at the minimum price of 10 cents per pound, is 20 cents; expenses of gathering the coffee beans and other expenses until the coffee is delivered to the market, 5 cents per tree. Net profit 15 cents per tree." Coffee husbandry will therefore form one of the most remunerative of Mexico's agricultural products, as there is a vast area specially adapted to its culture lying adjacent to ports, from which shipments can be conveniently made to Europe.

RUBBER.—Rubber planting is very profitable, and is largely increasing, especially in the States of Chiapas. Oaxaca, Vera, Cruz, Tabasco, and Guerrero. In the first-mentioned State, on the Pacific coast, there exist extensive forests of rubber trees, which are only necessary to tap in order to obtain the substance. It is estimated that Mexico could easily produce 10,000 tons per annum, which would command the same price as the best quality of Peru rubber, for the trees are identically the same as those in Brazil. It only requires the same treatment after the gum is extracted to produce an equal quality rubber. The present method of collection is by the Indians, who spoil both the rubber and the trees by their unscientific and wasteful methods. The rubber is cured in a primitive fashion, both the good and poor qualities being mixed together. Labour is abandoned and can be readily instructed to collect and cure the rubber to produce better quality, which being done, would largely increase the demand for Mexican Rubber. The Mexican Minister in Washington owns large tracts of land in Chiapas, where he has planted largely, and obtains a considerable and steady revenue from his estates. It is a tree which gives little or no trouble in cultivation, requiring no preparation of the land, as it seems to prefer poor and arid soil. In fact, it yields a finer quality rubber if it is planted under such conditions. The cost is about £9 to £10 to plant an acre with 300 trees, which is about the largest number to plant without overcrowding. The average yield of sap from a tree in four or five years is six lb. giving a total of 1,800 lb. to the acre; this would boil down to about 800 lb. of solid rubber, and when sold would realise about £24, giving, say, £20 net profit to the acre. This profit would gradually increase until the yield would more than double in the eighth and succeeding years.

COCOA.—Cocoa-planting is one of the oldest industries of Mexico, for the cocoa palm, known botanically as *cacao theobroma*, is indigenous, and was largely cultivated by the Aztecs. It is a source of considerable revenue to Mexico, for like most other agricultural industries in the country, where labour and land are so cheap, the cost of growing is proportionately low. Over 400 trees can be planted to the acre. There is a small return in the third and fourth years, but the yield is large enough in the fith and sixth to pay all expenses with a little over. In the seventh year the trees are in full bearing, continuing so for 30 years and over. The trees like lemons, bear buds, flowers, and fruit at the same time, so that ripe pods may be collected at any time, but there are periodical harvests depending on the dryness of the weather. Each tree yields about 60 pods which contain from 20 to 30 beans, which should give about 13 to 14 lbs. of cocoa beans, or an aggregate of nearly 7 cwt. per acre, and consequently pays handsomely. The cocoa bean is chiefly cultivated in the States of Tabasco and Chiapas. The best is grown round the Port of Soconusco, near the Guatemalan frontier, and is considered by connoisseurs to be of the finest quality grown. Its flavour and natural richness commends it to manufacturers in England. Chocolate sells at Soconusco for 20 cents per lb., and an excellent opening is offered for the cultivation of the cocoa tree on a large and systematic scale.

Mexico had a population at the Census of 1895 of close on 13 million—19 per cent being pure white race; 43 per cent mixed; and 58 per cent of Indian race. Mexico, the capital, is a town of 350,000 people, of whom perhaps 8,000 are foreigners. The following passage from the latest Statesman's Year-book is of interest in this connection:—

Government has assisted in introducing plants of vines, olives, and other fruit trees, while seeds of vegetables and of silkworms have been distributed gratuitously. The chief agricultural products are rice, maize, barley, wheat, beans. The cultivation of cocoa, coffee, and tobacco is extending. In 1893-94, 18,568 tons of coffee were exported from the Republic; in 1894-95, 16,247 tons; and in 1893-94, 356 tons of manufactured and 1,596 tons of raw tobacco were exported; in 1894-95, 360 and 929 tons respectively. Henequen is grown chiefly in Yucatan. The fibre exported in 1894-95 amounted to 147,984,457 lb. Other products are cotton, sugar-cane, vanilla, cacao, indigo, rubber, bananas. Large numbers of cattle are reared in Mexico for the United States. In 1883, in Northern Mexico alone, on an area of 300,000 square miles, there were 1,500,000 cattle 2,500,000 goats, 1,000,000 horses, and 1,000,000 sheep. In the whole of Mexico in 1883 there were 20,574 cattle ranches, valued at 103,000,000*l*.

Mexicau is rich in minerals, gold, silv r, lead, iron, copper, quicksilver, tin, cobalt, antimony, sulpher coal, petroleum, being either worked or known to exist. There in the country (April) 1, 1894) 3,167 mining enterprises, of which two-thirds belong to Mexico oompanies or individuals, and the rest to foreigners.

In 1893 there were in Mexico 2,899 factories for sugar and hrandy; 123 for woollen and cotton yarns and textiles; 41 for tobacco; the total numher of factories heing 3,844.

In 1893 there were nearly 7,000 miles of railway open, and 127 miles of tramway, besides a large mercantile marine. Telegraph lines covered 41,000 miles and there were 1,560 Post offices. All this will show how far advanced Mexico already is, and yet the scope for further development agriculturally—and especially in tropical planting—is very grcat; while the proximity to American and European markets gives an immense advantage to producers.

RUSSIAN TEA BUYERS IN CEYLON.

Mr. Isgaresoff and Mr. Daniloff, representatives of the well-known firm of Messrs. Popoff, arrived in Colombo by the ss. "Polynesien" and were met by Mr. A H. Thompson, the teamaker, with whom they have been engaged the greater part of the day testing tea for Wednesday's sale. Mr. Isgaresoff proceeds to China and Mr. Daniloff remains in Ceylon to do business in the Colombo market.

AMSTERDAM BARK MARKET.

Our Amsterdam representative wires us this afternoon that the result of the hark auctions in Amsterdam today was a drop in the unit of 1.4 Dutch ceuts. per half kilo., the average unit today working out at 5½ cents. (1d. per lh.), against 6.9 cents. at the last auction, a decline of over 20 per cent. It must be remembered, though, that only 2,953 packages were sold out of 6,547 offered, so that a large proportion of the hark appears to have been firmly held. The lowest price obtained for *Manufacturers'* hark was 10 cents, and the highest 46 cents, and the lowest for *Druggists* bark 8 cents, and the highest 90 cents. The tone of the auctions was quiet. Below in tabular form we give the total quantity of quinine (in bark form) offered and sold, and the names of the chief purchasers with the amount of hark they purchased stated in quinine equivalent:—English and American Quinine factories (principally) 1,891 kilos. Auerbach factory, 1,282 kilos. Brunswick factory, 3,248 kilos. Mannheim and Amsterdam factories, 4,269 kilos. Frankfort and Stuttgart factories, 70 kilos. Miscellaneous huyers, 1,533 kilos. Total sold, 10,690 kilos. Bought in or withdrawn, 18,257 kilos. Total offered, 28,947 kilos.—*British and Colonial Druggist*, Feb. 25.

PRODUCE AND PLANTING.

THE TEA TRADE OF FORMOSA.—Mr. Davidson, the United States Consular agent at Tamsui, Formosa, in a report to his Government, gives some interesting particulars about the tea trade of the island. It is stated in the report that, out of a total yield of some 450,000 half chests (18,900,000 pounds) for the season, more than half have been settled ou the Tamsui market for foreign firms the remainder having been consigned to the native ,brokers tag Amoy (a Chinese port lying directly across the Channel from North Formosa) for disposal on that market, where teas are sold in blocks of several hundred each, and the buyer is obliged to take the whole string, good and ad. Such of the purchase as is below the standard then usually returned to Formosa, where it is mixed with a good quality of green leaf and takes its place later with the others as a grade up to the standard. Of the total export, it is estimated that over 90 per cent goes to America and the halance is distributed between Great Britain and the Straits Settlements. The Chinese control the Straits Settlements trade, so that for all practical purposes it may be said that the foreign tea houses are exclusively engaged in supplying the American market. The handling of the trade is divided among five foreign firms, who, with one exception, have their head offices in Amoy and hranch offices in Formosa. For several years none but English firms have been engaged, but two years ago an American firm succeeded an English firm in Tamsui and they have already been able to obtain their share of the trade. There has been no serious attempt made on the part of the Japanese to enter the tea business either as planters, packers, or exporters, with the single exception of one company, which packed some 12,000 half chests to be disposed of to the foreign firms and made two small shipments totalling some 800 half chests (33,600 lb) of autumn teas to America *via* Kelung and Yokohama. It would seem difficult at the present high rates for freight first to Kelung and from there to Japan for Japanese to compete with the other exporters, if the Japanese continue to send their tea *via* Kelung and Japan, instead of Amoy, as is done by the foreign exporters.

AMOY AND THE FORMOSA TEA TRADE.—Amoy, China, is dependent to a great extent upon the Formosan tea trade for its prosperity, and there has been some apprehension in that port as to the likelihood of Formosa absorbing a large share of their business hy making direct tea shipments to America It would appear, however, that there is no probability that such will occur for some years to come. In order that this may be understood, it is necessary, said Mr. Davidson, to explain the peculiar condition existing in North Formosa. The present centre and most convenient station of the tea district is Twatutia (a suburh of Taipehfu, the capital). After the tea has heen packed and rolled sufficiently to permit of its trausport, it is carried to the hongs at Twatutia where it is fully prepared for foreign markets. Down the river to Hohe, where the shipping is done, is an easy sail of some ten miles for the cargo boats, and there the steamers, lying in quiet waters, are loaded with perfect ease and convenience. The cargo-boat charge to Hobe is about ⅜d per half chest, and the freight to Amoy 2½d. At Amoy the large American-bound steamers find it not much out of their way to call in for the tea which has there heen packed ready for the foreign markets. With the facilities for loading in that harbour, they are only detained a few hours. Formosa can offer no such advantages. Tamsui harhour (Hohe) admits only vessels which draw less than 13 ft., while Kelung, in the present condition of its harbour, is unsuited. The harbour is being improved, but it will require many years before the work is finished, and even then there are other difficulties nearly as great. At to the suggestion that the final packing of tea be done in Japan it would seem necessary that railway running to Kelung be prepared with big trains, useful only during the tea season, to carry the tea to Kelung at the same rate as the cargo boats charge to Hobe—⅜d per half chest—and that steamers carry it to Japan for the same rate as it is now carried to Amoy, 2½d per half-chest—for the reason that the rate from Japan to America and Amoy to America are about the same. Steamers cannot, however, carry tea from Kelung to Japan proper for 2½d aud pay expenses. Again, it has been said that the American steamers would call at Kelung and pick up the teas as they do at present at Amoy. But it seems unlikely that Kelung can be made as safe and quiet a harbour as Amoy, and even were it accomplished, it seems improbable that the American steamer would care to take the journey around the storm-ridden shores of North Formosa, if the tea could be obtained at Amoy.

Upon the establishment of the Japanese administration in Formosa, the people were relieved from all taxes for one year. At present, however, taxes are again imposed, including a tax on tea. The impost is 2.40 yen (5s) per picul (133lb), which, with the addition of the customs-export tax of 1.10 yen (2s 3½d), gives a total impost of 3.50 yen (7s 8½d) per picul (133lb.) Although this is larger than the Japanese mainland tax, it is small compared with either the old tax in the island, 6.20 yen (12s 11d), and the present Amoy tax, 6·85 yen (13s 5d).

THE INDIAN TEA ASSOCIATION (LONDON.)

EXTRACTS FROM MR. BLECHYNDEN'S REPORT FOR THE YEAR 1897.

Mr. Blechynden, in his annual report for the year 1897, addressed to the Secretary of the Indian Tea Association (London,) says :—

JOINT ACTION WITH CEYLON.

It affords me great satisfaction to be able to state that the complete alliance with the Ceylon Association, which was entered upon in 1896, continues in full force and has remained upon the most harmonious footing. This solidarity has been a great source of strength to both Associations in their relations with the trade here. This aspect is as important as the financial side of the question. From the latter point of view alone the working power of the two Associations combined has been more than doubled.

SUBSIDIES.

As progress in the taste for our teas in this country shows itself more and more as time passes, we have been able to modify the system of giving subsides or grants in aid to firms handling and pushing them. When we made our first steps in this direction our aim was to encourage firms not hitherto interested in India and Ceylon teas to identify themselves with their introduction here and thus secure the machinery at their command to that end. We had also to offer some encouragement to some firms already in that line of business to continue efforts which had in many cases not proved very remunerative. The plan has worked very well, but has the objection that it is liable to abuse and we have more recently preferred to follow it in a modified form. As pointed out in my last report, the system of grants insures the expenditure of each sum under proper supervision, and work can be done and territory covered which would cost the association a great deal in salaries and expenses to supervise were it done directly.

TRAVELLING.

During the year I have visited most of the large centres where work is going on at different times, and they have been visited by Mr. Mackenzie independently. This work of inspection is very useful and should be done more frequently than I have been able to spare time for. It is only by actual inspection of the work as it goes on that we can be satisfied that the spirit as well as the letter of our arrangements are being carried out. During the summer, when there was but little to do here, I visited London and had the advantage of personally meeting the committee. While in London I called upon some firms and had the satisfaction of interesting at least one of them in the American work, which I had not heretofore contributed towards it.

LETTERING STORES.

The work in this direction has fallen off considerably. This is due to several causes. The firms who used to apply to us on behalf of the grocers are now nearly all engaged in pushing packets of their own, and are not desirous to give prominence to "India and Ceylon Teas" in a general and not in a particular way. Many firms have letters similar to those we use for their packet goods. Finally the teas are Low pretty generally sold by grocers, and is not an uncommon thing to which special attention has to be drawn. There are many storekeepers—who hang up rough paper signs in their windows, calling attention to different things at different times—who now include our teas in such notices.

SHOWS AND DEMONSTRATIONS.

As the system now adopted throws all such work as would come under these heads into the hands of packet and other tea houses, the small expenditure incurred under these heads was very early in the year under review.

ADVERTISEMENTS.

The expenditure under this head is by far the heaviest item in the accounts for the year, being more than double that of any other item, and equal to about two-thirds of the entire expenditure under all other heads put together. As has been stated in another part of this report printing has been charged to this head ; the balance consists mainly of two items—newspaper and magazine advertising. Under this head, too, have been charged several special advertisements which have appeared in souvenir programmes, such as that for the inaugural ceremonies at Washington, during the installation of Mr. McKinley as President, and others of less importance. During the summer months we had a Vitascope advertisement running in a prominent situation on Broadway in the heart of the theatre district. Of course such things are displayed at night only. This advertisement attracted a great deal of attention, as it is comparatively new to have such displays, and we succeeded in making ours very striking and dramatic. As an advertisement of 200 dols was offered for a poem of twenty lines, descriptive of Indian and Ceylon tea. Over 5,000 essays were sent in, and a committee awarded the prize to the successful competitor. As regards newspaper and magazine advertising I have little to add to my report on this subject on the plan we adopted in 1896. We have changed many of the magazines we then used and taken up others, but the aggregate circulation is probably about the same. In addition to the daily newspapers we have space in the leading commercial journal of this country, published in New York, which we use as we require it. The statistics of the tea imports into this country we published in this paper for the first time, and that advertisement caused a good deal of comment, the facts not being at that time thoroughly realised even by people in the trade. We were able to show that the consumption of our teas in North America had increased by about 54 per cent. in two years, against a decrease of 13, 40, 23, 13, and 53 per cent. in the consumption of other teas, the only kind besides ours showing an increase in the same period, Formosa Oolongs, having gained 13 per cent. The final or actual figures were not at the time and are not yet available, but closer estimates can now be made and even in the last case we will be able to show that there has been a falling off and not an increase

in the consumption of Formosa teas, some five million pounds, it is now estimated, having been shut out from this country by the action of the New Tea Law and the regulations in force.

GENERAL REMARKS.

In the last paragraph I referred to the New Tea Laws. Soon after they came into force it was found that the regulations intended to give them effect were so framed that they would exclude practically all but our coarse teas. These regulations read that our teas were to be tested with a number 16 sieve, and when more than 10 per cent. of leaf passed through the meshes it was to be classed as dust, and the tea either rejected or the excess "dust" removed before importation. I had to deal at such length with the matter at the time in my letters to the committee that it is needless for me to enter upon it again here, or to point out the hardship and injustice of this rule. It was not so much the actual harm that was done at the time (though one firm alone had some 45,000 lb of packet tea excluded at one time), but the effect of the rule on firms importing tea was to leave them in doubt as to what would be passed as tea and what classed as dust. The order hit the packet firms particularly, as in their case when tea was found to contain more than the 10 per cent. of fine leaf each packet would have to be broken open, the tea bulked and passed through the sieve, and then re-packed. After a good deal of trouble and much agitation and pressing the rules were revised in our favour, for which it was necessary to convene a meeting of the merchants, who acted as an advisory committee to the Treasury Department in drawing up the rules.

Owing to the circumstances surrounding the case the tea importers most deeply interested found that they could not act as vigorously as they might wish to do, and the active work therefore rested with the associations, which being independent bodies, had nothing to gain or fear from being in a position of seeming opposition to the wishes of important members of the trade. The position I was forced therefore to occupy for a time has brought me a recognition far beyond anything I merited from some of the leading importers, who the day before Christmas presented me with a very handsome letter and a cheque for 500dols. to mark their appreciation of what the associations had done.—*H. and C. Mail*, Feb. 25.

OUR TEA INDUSTRY AND A YEAR'S LOSSES.

We preached "caution" the other day in view of the outlook in the local money market. "A Man of Business" emphasizes the lesson after a startling fashion in dealing elsewhere with our staple planting industry. He shows that the tea planters of Ceylon have received, approximately, ten million rupees less in 1897 than in the previous year for their produce; and he rightly infers that if exchange is to continue as adverse as at present and if prices do not improve, the outlook for our planters is a serious one. Already, we hear the question of abandoning tea fields yielding less than 300 to 350 lb. per acre is being considered, and certainly there should be a warning to our authorities, both here and at home, in the figuresso far adduced, and in the outlook so far as it can at present be estimated. "Caution" in dealing with the general revenue ought to be a primary consideration.

MEXICAN PRODUCE AND ESTATE SYNDICATE, LTD.

This Company, of which our readers have already heard through the letter of our London correspondent, is going in for a very large increase of capital.

This Syndicate was (says a contemporary) formed in October, 1897, to take over certain options to purchase properties in Mexico, and to send out an experienced Ceylon Planter, to report upon same, with the view of subsequently forming a larger Company to purchase such properties as were reported upon favourably, and which could be obtained on resonable terms. The Syndicate secured the services of Mr. Cecil O. Naftel, who is well-known in Ceylon, having held for many years the responsible post of Inspector and Valuer of Estates in that Colony. Mr. Naftel proceeded to Mexico in November last, accompanied by several other Ceylon Planters interested in the Syndicate, and the results of his inspections so far are favourable to several of the properties reported upon, but inasmuch as the owners are disinclined, at present, to extend, the options for such a period as would enable the Syndicate, if the shareholders thought fit, to form a larger Company for the purpose of acquiring them, it is submitted to the shareholders, that the best course to pursue is for the Syndicate to make a start by themselves by purchasing one property outright, and the "Tapia" estate has been selected, as the most desirable under the circumstances. Mr. Naftel's very favorable opinion, it is stated, is shared by Messrs. John Clark and J. G. Fort, both experienced Ceylon planters, who have lately returned from Mexico, having visited that country in order to satisfy themselves, by ocular proof that coffee cultivation there answered to the favourable descriptions given of it. As compared with Brazil, the advantages of coffee cultivation in this district of Mexico are declared to be immense—labour, transport, and freights are as cheap, or cheaper, whilst the quality of the coffee is so much superior to that of even the finer grades of Brazil coffee, that at the present time, when Brazil coffees are fetching prices of from 30s to 40s, according to quality, the product of the "Tapia" estate finds buyers at from 65s to 85s per cwt., sales having recently been made in Mincing Lane at these prices.

The Syndicate has the offer of the estate for $300,000, inclusive of the present crop which is almost ready for shipment, but the Directors hope to obtain some reduction in this price. According to Mr. Naftel's estimates, which the Directors are satisfied have been made with great prudence, the nett income from coffee alone during the coming season (1898-1899 crop) will be fully $40,000, on the basis of the above value of 55s, per cwt., besides which the Directors are informed there was last year a profit of $6,000 from sundry sources, cattle etc., which amount this year should be larger. After allowing for interest on the Mortgage Debentures, and the London expenses of the Company, this will leave a return of not less than 10 to 12 per cent on the share capital, and were the present market value for this coffee realised, the returns would be considerably larger. The proceeds of the in-gathered crop of 1897-98, which is, as already stated, included in the price to be paid for the estate, will be utilised as working capital, and for opening out new coffee plantations. The amount thus realised should be ample for all requirements. As the Syndicate is

purchasing the estate direct from the owner, there are no intermediate profits, and the whole of the purchase money will be paid to him, plus a small commission to Messrs. Wm. Young & Company, who effected the introduction. In due time, as opportunities offer, it is the intention of the Directors to acquire other first-class properties, which will involve the formation of a larger Company, by which the shareholders of the present Syndicate are to greatly benefit.—Local " Times."

NILGIRI TEA.

Mr. George Christison, the well-known Dardeeling planter, who recently made a short stay in Coonoor, gives the following opinion on Nilgiri tea: " I like your District in many ways. Your soil generally is very good, and your tea *looks* healthy and well. Of course without being with you all the year round, I cannot form any very reliable opinion. . . . As you must know, your tea has not been in good favour in the London market. This may, I think, be remedied in some measure."—*M. Mail*, March 15.

CEYLON NORTHERN PLANTING DISTRICTS.

(Communicated.)

CHANGED TIMES—THE OUTLOOK FOR TEA—LABOURERS NO LONGER RULE—NATIVE TEA GARDENS LIKELY TO CLOSE—BRIGHT-EYED HOPE!

Just at present the climate of the districts of which the Knuckles may be taken to be representative is matchless, bright, cool, and still. The outline of the hills is very sharp against the sky, and the shadows are wonderfully distinct. It is not always like that in this quarter; more than usually favoured with rain for the last two years, a dry season like the present is all the more enjoyed, and the flush which is vigorous and plentiful indicates how willing the trees are to respond. Tea however is somewhat under an eclipse, and when it is mentioned it is not with that fond respect that was wont to be. The question is " Where are we bound for"? and anything from a hard, worrying struggle to out-and-out bankruptcy and abandonment, is the answer given according to the disposition and temperment of the answerer. When every planter's eye has been opened, and got concentrated on the tea problem, it is not much in the way of a fit fact that is overlooked, and when you have had a series of doses of doleful ditties, all on the one subject, it becomes a little monotonous, not to speak of depressing and if you can't see any clearer way out of it, just take refuge in the comforting thought that "it is the unexpected that always happens." All the same the outlook is serious enough, and you hear of the stirring of Company Directors issuing orders for impossible quantities at or over market average—that delightful combination of quantity and quality combined, which would suit Managing Directors and find the dividends, the shareholders demand. "You must do it or die" is the stern mandate "and I give you a year to accomplish it." Accomplish the impossible! What a task! Clearly the times are out of joint, and we will all have to hustle, to keep step to them.

Even the Coolie who has had his innings is now finding out that he has reached the end of his tether, and the changed tea horizon is reducing Ramasami from the glorified individual he was when labour was much needed, back into his normal state. The gangs that are heavily indebted are handed "tundus" and invited to seek pastures new, a clear manifestation that there is a fear abroad that "to hold the baby" now, is rather precarious. These silver-gilt Malabars, don't find that there is anything like the former willingness to pay up anything that may be asked, and after much wandering and eye-opening they come back—unsuccessful. Here the trouble does not end, for with a debt which they can *never* work off, and the caddie keepers hungering for blood, and threatening law proceedings, the place gets rather hot for the silver-gilt, and they incline to fold their tents like the Arabs, and silently steal away.

There is likely to be a good deal of bolting of small gangs, and a loss of coin therefrom. Those Companies who some time ago were prepared to give any advances, and had no hesitation to lavish out, now that dividends are difficult to earn and the Directors' fees are sacrilegeously handled and questioned, will, perhaps, postpone writing off lost advances, but it will have to be faced. It will be a happy day when the kangani, who would come up to the bungalow—or meet you on the road with a cough to attract attention, and ask for a thousand rupees, and when you demurred, insinuated a "tundu"—when a high-flier of this kind,—finds that *that* style is wholly gone out, it will be a good thing. The "sweet uses of adversity" will appear in time when the planters' attention, which is at present wholly concentrated on probable losses, has relaxed a little and the horizon widened; for, it is a blessed law that there is compensation for most things.

The new clearings—native mostly—are still on the increase; but if prices are to keep down, it is evident that many of the native gardens will shut up, and that ere very long. The Sinhalese or Tamil proprietor likes well enough to follow the European where coin can be made; but when the game is partly a losing one, and the expected return is postponed, the native soon wearies when his banquet is only the pleasures of hope. And yet, has it not often been the most enjoyable of times, and what a lot of it there is even in these present dark days in Ceylon? Without bright-eyed hope it would be a poor world!

" BAD TEA."

Tea importers over in Victoria are complaining that the local Customs Department is too particular about the quality of tea shipped into the colony, and that the officers of the department have exceeded reasonable limits in their rejection of shipments of the leaf. According to a Melbourne paper, the importers allege that the Victorian Customs Department has often condemned as " bad " shipments of tea which have obtained subsequently a ready passage through the Customhouse of Great Britain, and which have been there at more satisfactory rates than could have been obtained at Melbourne. To demonstrate that they were right they sent recently a condemned shipment of tea to London, and had not the slightest difficulty in placing it upon the market there. The importers contend that the Custom-

house officers have been in the habit of condemning as "bad" tea that was not in any way "bad," but was merely a low-grade quality, and the importers say that this was a wrong condemnation, inasmuch as it meant the shutting out of very cheap, but, at the same time, not unwholesome tea. In the circumstances, the opinions of the secretary of the Customs and of the solicitor to the Board of Trade have been obtained, and these have decreed that the Victorian Customs authorities have been somewhat too rigidly interpreting an act which follows precisely the wording of the English act. The correct practice, they say, appears to be to reject all tea in which exhausted leaf or foreign substances are mixed, or in which leaf of bad quality is present in such proportion as would render undesirable its consumption. —*Madras Times*, March 15.

THE FERNS OF BRITISH WEST INDIES AND GUIANA.

I am delighted to see that my good old friend Mr. Jenman, is describing the Ferns of British West Indies and Guiana. There is no one living who knows them better, and whatever Mr. Jenman does, he always does well. The Bulletin you sent me only contains two genuses—or what are popularly known as "Filmy Ferns." No less than 29 species of Hymenophyllums and 42 species of Trichomanes are here described, which shows what a wealth of these exquisitively beautiful Ferns there are in the Western British Colonies (so far as I can make out we have only 9 species of Hymenophyllums and 16 or 17 of Trichomanes in Ceylon). The introductory paragraphs to the tribes, and the key to the genuses are, to my miud, as plain as they can possibly be, and the descriptions of the species are so well arranged that any one who only knows a little of botany, can easily understand them. The explanatory note following each species as to localities &c. are to the point, and altogether this work promises to be of very great value both to professional cryptogamists and amateurs.—*Cor.*

QUININE, TRACTS, AND GINSENG.

The culture of Ginseng, the celebrated "febrifuge" and aphrodisiac of the Chinese, has been of old one of the principal industries of Corea. Ginseng is not used in Western pharmacy, and its culture has been so often described that we do not propose to revert to it here. But it is of some interest to hear, as we are told by H.M. Consul at Soul, in Corea, that quinine has lately been introduced into that country in considerable quantities, and is gradually superseding Ginseng among the Coreans. The introducers of quinine into Corea are the missionaries, who, with a fine sense of practical Christanity, have hit upon the device of selling it at cost price in lieu of wages to their native distributors of tracts. The tract-disseminator re-sells the quinine to the natives at a profit, which he pockets, and the missionaries get their literature distributed free. The arrangement seems to suit all parties.—*Chemist and Druggist*, Jan. 22.

"LADY BIRDS" FOR THE PLANTERS OF SOUTHERN INDIA.

SIR ARTHUR HAVELOCK'S Government has done the right thing by the coffee-planters of Coorg, &c., in reference to their request for help about importing lady-bird beetles. We have received, today, copies of two official General Orders on the subject. In the first, dated 11th December, the decision reads:—"The Government is unable to render the planters any substantial help in obtaining the services of a competent Entomologist or an Agricultural Chemist, but that arrangements will be made with the Government of Queensland for the shipment of a consignment of lady-birds." But in a later order, Jan. 17th, we find:—

In modification of the decision expressed in paragraph 2 of the first of the orders read above, His Excellency the Governor in Council resolves to approve of the proposal made by the United Planters' Association to send Mr. Newport to Australia to collect and bring over to this country a consignment of lady birds and is prepared to meet a moiety of the cost calculated on the basis of a maximum expenditure of R4,000 under the following items:—(1) Passage to Australia and back; (2) return Sydney to Brisbane; (3) expenses in Australia, say for two months; (4) travelling expenses in Australia; (5) expenses for collecting the lady birds, packing, &c., and freight; and (6) sundries. In other words, the Government is willing to make a maximum contribution of R2,000 in respect of the expense under those items. Mr. Newport will be furnished with a letter of introduction to the Colonial Secretary to the Government of Queensland. The Accountant-General is requested to place an advance of R1,000 at Mr. Newport's disposal.

Sir Arthur Havelock deserves credit for so handsomely modifying the original decision.

PLANTING NOTES.

"COLONIAL": THE COLONIAL COLLEGE MAGAZINE.—Winter Session, December, 1897. Contents as follows:—Old Students' Column:—Communications from Africa. United States, South America, Italy, and Canada; Soils from Argentina; The British South African Police; Colonial Progress; Agriculture as a Career; The Suffolk Horse; Estate, Farm and Building Notes Weather Report—October to December, 1897; Weather Report for 1897; The Athletic Club Report; The Entertainment Society; Responsibilities of Young Englishmen; Our Frontispiece; Opening in the Colonies, &c.; College Notes; Notice to Correspondents; Old Students' Directory (revised).

TRIFACIAL ORANGE.—M. Delchevalerie, in his account of the *Parc Public de l' Ezbekieh, Cairo* (Ghent) p. 11, already noticed in these columns, gives the following particulars regarding the trifacial Orange: "Citrus Bigaradia, has long, pointed, often wooly leaves; the petiole is in some cases winged, in others not so. The flowers are white, but tinged with violet outside. When this tree was raised at Florence it was proposed to graft it, but the stock having grown out beneath the graft, it was noticed that the tree bore two sorts of leaves. It was therefore left to fruit. It was at first supposed that two branches, one of the Citron, the other from the Orange, had been grafted simultaneously, and had become united, but, as has been said, the tree produced shoots beneath the graft. Whatever the reason, the foliage shows this peculiarity, that the branches were intermixed. At Paris, at Huward's, there was formerly a specimen sixty years old bearing fruits partly Citron, and partly Orange. At Cairo, in the garden of V. R. de Choubeah, formerly the residence of Mehemet Ali, was one of these eccentric Orange trees from which we have gathered furits of a three-fold form and nature, one third of each being Orange, one third Citron, and one third rough-skinned Citron."—*Gardeners' Chronicle.*

THE VALUE OF ESTATE PROPERTY IN HUNASGIRIYA DISTRICT,—may be judged from the fact that 190 acres of tea and 154 of waste and reserve on Weygalla realized £6,500—a good bargain, we should say, for the purchaser Mr. Beilby. The half of Hunagalla is equal to 215 acres tea and 114 reserve or waste and realized £7,250.—We have not heard the price paid for Ormondale in Allagalla; but it is sure to be handsome for such young tea on virgin soil.

DUST TEA WANTED FOR SOUTH AMERICA.—We have to thank Mr. Thos. Christy, F. L. S.d of Lime Street, for the very welcome news ito Ceylon planters, of a special demand setting an for Eastern teas (even if for China as well as Ceylon) on behalf of the consumers of the Paraguayn Maté tea in South America. It would seem from what Mr. Christy says that Matè may be altogether superseded and he thinks that Ceylon and Indian "dust' tea is just the article required in substitution. Altogether there are forty to fifty million of people in South America, and perhaps one-half may be taken to be patronizers of mate; while nearly all may be tempted to become patrons of our teas if they put attractivetly before them.

THE COPPERAH MARKET: A RISE IN PRICES.—The market for copperah has gone up rapidly during the last four days, and dealers are bringing into Colombo anything and everything they can get to take advantage of the rise. "Cart" copperah as a rule fetches much less than "boat" copperah, and, owing to this, the former is being thrown into boats, and the arrivals of carts are almost *nil*. Well dried estate and Calpentyn, which fetched R39·50 per candy a few weeks ago, is now selling at R42, and Marawilla, Madampe and other interior grades, mixed with black and tender refuse, are fetching R40 and R41 per candy. It is to be regretted that prices are being run up, considering the low state of the oil market, and in view of the forthcoming crops which are said to be heavy.—*Cor.* of local "Times."

CEYLON *v.* INDIAN AND JAVA TEAS.—A very careful and experienced Ceylon tea planter and maker, discussing the letter of the Lane expert to Mr. Wm. Mackenzie, says that in *appearance*, Ceylon upcountry teas as a rule can never equal Indian or Java teas on account of the more flexible leaf of the latter as compared with the generally stiffer or leathery high grown Ceylon leaf. It is also only natural, that teas from the rich heavy soils of Assam and Java should have a fuller "body" than much of the Ceylon tea; but in the actual work of "rolling," which the expert thought was deficient in the case of Ceylon teas, as a matter of fact our teas are often rolled for a much longer time than those of Assam. It is not therefore, a case of the Ceylon planter refusing to profit by outside experience; but the requirements mentioned are just what cannot be provided as a rule in the case of Ceylon teas, although in other respects they score over the teas of both India and Java.

TEA IN RUSSIA.—Here is how the London Tea Letter of *The Planter* deals with this question very sensibly:—

The total consumption in Russia is, I am told, about 120,000,000 lb., of which in the year just ended perhaps four per cent came from Ceylon. Of Indian teas, to use the language of analytical chemists, there was little more than "a trace." So that here as in the United States there is, even among present consumers, a big field open for missionary enterprise. Outside that field th possibilities of the future are practically unlimit... But in one respect the problem in Russia differs essentially from that in America. In the United States the non tea drinkers are at present coffee drinkers almost to a man, the consumption of coffee running as high as 10 lb. per head of population, and the battle of tea has, in fact to be waged against the fragrant berry already holding the field. The very low price at present ruling for coffee is, of course, an adverse element in the struggle. In Russia, on the contrary, tea is already the favourite beverage, and the consumption is limited, not by the existing taste for any competing rival, but solely by the absurd conservative, obstructive, ways of the Russians themselves. Government and traders both seem to combine to crush any tendency towards expansion of demand by high duties and big profits, the object being to confine the trade as far as possible to the few firms who at present hold it in their hands. A duty of 1·10½d per lb. on entering the country, obstructive regulations as the packing of teas for sale retail, result in prices for even teas of the poorest class that except to the well-to-do, are prohibitive. The enemy then to be fought in Russia is the system. The taste for tea is already established, let the duties be reduced, and distribution be made free of trammels, and the result would be seen not only in an enormously increased consumption, but also in a revenue advancing by leaps and bounds such as in days past used here to delight Mr. Gladstone.

Who will enlighten the Russian Finance Minister?

"THE TEA PLANTERS' MEMORIAL."—Such is the nominal heading we find in the Mauritius Planters' *Gazette* of 1st March. The striking fact is that there should be more than one or two tea planters already in the Sugar Island. They are petitioning for a rise in the import duty on tea and no wonder, for we read.—

At the present time the duty on imported teas is R0·10 per kilo. So far as we have been able to ascertain this is the *lowest* duty paid in any country, be it a British or Foreign possession. It is scarcely necessary to give a tabulated statement of the duties exacted in various countries: sufficient to say, that that range from 0·10 per kilo [or 4½ cts per lb.—!—ED. *C.O.*]—in Mauritius to about R1·12 per lb in India. [This is absurd: the Indian duty is 5 per cent on a value of 50 cts per lb for black tea and 75 cts for green tea—therefore only 2½ cts per lb for ordinary tea! —ED. *C.O.*] In Ceylon duty on imported teas is R0·25 per lb. Those who drink tea in Mauritius have to pay from 80 to 90 cents per lb. for what they buy. The average price for teas disposed of at the weekly sales in the Colombo market, is about R0·36 per lb. Even assuming that the tea imported into Mauritius costs this figure—but we do not think it does—after adding freight, landing charges, duty etc., it stands the imported in, at the very outside, R0·50 per lb. There is therefore a profit of between 30 and 40 cets per lb or nearly 80 % on the cost price, to be divided between the importer and the retailer. It does not require very great intelligence to see that, at the present time, the cost of production and preparation to the Mauritius Tea Planter must be infinitely more than to his brother in Ceylon. The bushes are not, in the majority of cases, yet in full bearing, and the equipment of tea houses is, in most instances, crude and imperfect. The cost, therefore, of marketable teas being greater, every assistance should be given the Mauritius planter to enable him to enter the local market on terms of equality with his more advanced competitor. Our impression is that a good drinkable tea can be offered to the public both by local Growers and Importers for R0·80 the pound, and if the Government would impose the same duty on imported tea as is done in Ceylon, viz: 25 cts per lb Mauritius and Foreign teas would compete in the local market on even terms.

This is one result of leaving the absurd import duty of 25 cents per lb in tea in Ceylon; Mauritius planters say rightly why should we not have the same duty—and so shut out Ceylon teas from Port Louis market.

THE FALL IN PRICE OF COCONUTS.

In considering the disastrous effects on our industries of the rise in Exchange, and of the falling-off in income which is involved in the disturbance in trade which has followed, one is apt to think only of Tea. And, perhaps, that is only natural, considering that it stands first among our staple exports, both in value and in the importance as well as suddenness of its development; but in discussing "the situation" we must not lose sight of the effect of the "dishonest" rupee on our other exports. The extent and gravity of this effect have been brought home to us by a reconsideration of the Report of the Horrekelly Estate Company Directors, which was adopted at a meeting of shareholders held on Monday last at Colombo. The proceedings at the meeting have been already published and we briefly referred to them at the time, congratulating the shareholders (in these "hard times") on their five per cent dividend. But a friend who has sent us a copy of the Directors' Report for the previous year—when ten per cent was earned—has enlightened us and shown that there is room for criticism, or at any rate for seeing how the inflated rupee and high exchange may affect other produce than tea. We are not wrong, we believe, in taking the case of Horrekelly as a typical one. Of course, there are Coconut estates in Ceylon better than that on which the resolute and enterprising veteran, David Wilson, spent so much of his capital and energy, just as there are many worse. Maravila, however, is counted among the best of our Coconut districts, and Horrekelly is well situated with respect to the sea in that division, while there are those who believe that this most useful palm flourishes best on and near the Coast, where it receives a liberal allowance of salt from the soil as well as from the salt-laden winds; it has exceptional facilities of transport in the canal which runs through it, and in the old and new roads which almost form its boundaries; and it has been liberally cultivated, perhaps from the beginning, but certainly since it passed into the hands of the Company say about twenty years ago, if not more. Yet what do we find? The dividend declared for last year (which we thought satisfactory before we were reminded of the rate for the previous year) is only just one-half of that for 1896! It would be a mistake to refer the whole of this difference to the course of exchange; for there are other circumstances, to which we shall presently advert; but there can be no doubt that the fictitious value of the rupee has told on the operations of those who deal in coconut products—whether oil, desiccated kernel, copra, or coir—and resulted in lower prices for nuts.

Among the other causes, which told on the income of the Company last year, was undoubtedly a shorter crop. Thus, we find, in the comparative statement embodied in the Report that whereas the estate yielded 1,548,81 nuts in 1896, last year the yield was only 1,400,835. Here is a shortage of nearly 148,000 nuts—due, we suppose, to a less favourable season and not to any falling-off in cultivation; for the crop for 1895 is returned as 1,332,965 and for 1894 (in the Report for that year which we have just looked up) as 1,102,237. The heavy rainfall, of the latter half of 1895 and of 1896 as a whole, had evidently benefited the property, and hence what looks like the exceptionally large crop of over a million and a half of nuts. Well, a difference of nearly 150,000 nuts in the crop statement, must tell on the income; but it is not there that the chief trouble was found, so far as we can see. Working out the average from the total income from nuts and copra and the number of nuts picked, we make out that 1896 showed R40 per 1,000 nuts, whereas last year gave only R34 per 1,000. Here we have a difference of R6 per thousand, or nearly 15 per cent—a fall that may be compared with that in tea shares for the period—and that works out into a big sum on a million and a half of nuts. We find too that the experience of most coconut proprietors is similar; for inquiries have made us acquainted with differences of from R4 to 6, and even more, in the average prices of the six crops generally calculated for the year. We look upon the average which Horrekelly obtained for 1896 as uncommonly good, and fancy it must have made an advantageous contract before prices began to recede. But not only had the Company to contend with a shorter crop and much lower prices; but its expenditure was larger! The explanation given at the meeting to an inquiring shareholder was that the crop of 1896 was sold on the spot in nuts purchased for Colombo Desiccating Mills; whereas the crop of 1897, in the absence of an advantageous offer for nuts, had to be converted into copra; and the cost of manufacture, of course, swelled the expenditure. Still, economy seems to have been practised; for we find the expenditure was lower in 1897 than in 1895—in which year the crop of nuts was smaller and the outturn of coir fibre was less. The Company, so far as we can judge, seems to us to be in a sound position and to be carefully administered; but it has suffered from exchange like most of our Island industries; and, we fear, unless the demand for coconut oil should advance, there is small chance of the price of nuts which ruled two and three years ago being ever again realised, with so much land coming into bearing. Horrekelly has, however, this advantage—that it will soon have two Desiccating Mills at its doors—which should help to raise the price of nuts locally.

PLANTERS AND PLANTING IN THE MALAY PENINSULA.

A recent mail brought us some interesting papers from the Straits in the Annual Report and Proceedings at a General Meeting of the United Planters' Association of the Federated Malay States and separately of the Selangor Planters' Association. But the funny thing is that we find so many of the same planters taking part in both Associations—Messrs. F. H. Hill and E. V. Carey being most prominent in both—while Mr. Tom Gibson is Secretary for the two bodies. We fancied 'Selangor' might be as a District, subsidiary to the "United"; but if so it is far better off financially, closing the year with a credit of 790 dollars; while the United Association has a debit balance of 344 dollars. Moreover we think Mr. Carey's remarks at the Selangor meeting are about the most interesting:—

There was no denying the fact that the last year had been a disastrous one for them all. The local market price of coffee was at the commencement of the year $31, and at the close of the year it had fallen to $19. The position was both serious and critical, but he

still saw no reason why they should not weather the storm. Ceylon, with a comparatively worn-out soil, had passed through a worse crisis, and now, thanks to a flourishing tea industry, was one of the most prosperous of our Colonies. In Selangor they had virgin soil and coffee was not the only product which would grow there. He would particularly draw their attention to Mr. Derry's report on the Kuala Kangsar rubber trees, which deserved their careful attention. The report was being printed and would be sent to all members shortly. The Klang land was much the same as at Kuala Kangsar, where such excellent results had been obtained, and, in his opinion, there was a tremendous lot of money in Para rubber. Coconuts also could be seen in the Klang district growing in perfect harmony with the coffee, which looked exceedingly healthy and was bearing heavily. There was one very important point which he thought had received insufficient attention, and that was the curing of their coffee. When Mr. Stephens, at a meeting of the United Planters' Association, suggested that expert opinion should be obtained from Java, many of us thought such not necessary and that we had nothing to learn, but there was no getting away from the fact that in Java the planters had got the market in their favour, whereas our coffee was not eagerly sought after. The more he studied this question the more convinced he became that we had nearly everything yet to learn on this important subject, and he could not too strongly urge upon all of them the necessity of experimenting, as was being done by a planter at Kajang, who had already made some most valuable experiments.

From the Selangor Report we learn.—

The actual increase of land under coffee should be 2,454 acres, as 600 acres of land under tapioca, included in the 1896 statistics, have gone out of cultivation this year. These returns cannot be regarded as other than satisfactory in view of the fact that whereas in December, 1896, the market quotation for No. 1 Liberian Coffee was $31 the price has now fallen to $19. That this latter figure shows quite an abnormal condition of things, your Committee feel convinced, and that, with improved curing, a re-action will set in appears merely a matter of time, for the Straits Settlements can always more than hold its own with regard to cost of production as compared with Rio and Santos, whose huge crops have contributed so largely to the present depressed condition of the coffee market. At the same time, it is evident that coffee planters must turn their attention to the cultivation of other products as well, and your Committee are glad to be able to report that a large number of the valuable Para rubber trees have been planted and that coconuts and ramie, the latter at present on a small scale by way of experiment, have both received their share of attention.

Ramie.—The importance of the ramie industry was brought to the notice of Government and assistance was asked to provide for an expert to visit Selangor and report on the suitability of the various districts for the cultivation of this product. The reply of the local Government was unfavourable; but, in view of the fact that both the Indian and Dutch Governments have offered considerable pecuniary assistance in connection with the ramie industry, and the cultivation being one which may greatly add to the prosperity of the Federated Malay States, your Committee addressed the United Planters' Association on the subject asking that body to bring the matter to the notice of the Resident-General. We regret to say that the Resident-General regarded this question in the light of class legislation and on this score could hold out no hopes of Government assistance.

A memorandum from Mr. Wray, Curator and State Geologist of Perak, was however, published for the information of planters, and was altogether unfavourable to the prospects of ramie cultivation in this country; but the opinions of the different authorities who have studied this subject or so entirely contradictory that your Committee cannot regard the fiat of Mr. Wray as in any way conclusive, nor do they see how the application of a State grant towards the elucidation of a question of such importance to Europeans and natives alike can be fairly described as legislation for a class.

As regards the prospects of Coffee crops we have these figures:—

Statistics collected from those in favour of a general curing establishment, with the object of approaching well-known curing companies in Ceylon and other countries and inviting them to erect a large store in a suitable locality in Selangor.

1.	Acreage under cultivation in	1898 ..	11,992¼ acres
2.	Estimated crop in piculs, for	1898 ..	12 633 piculs
3.	,, ,, ,, ,,	1899 ..	21,179 ,,
4.	,, ,, ,, ,,	1900 ..	38,093 ,,
5.	,, ,, ,, ,,	1901 ..	53,290 ,,
6.	,, ,, ,, ,,	1902 ..	64,533 ,,

(A picul is 133⅓ lb. English.—Ed.)

Turning now, to the United Planters' gathering, it is interesting to note so many names known in Ceylon:—

Mr. T H Hill (*Chairman*), Messrs. E V Carey, L. Dougal, C Meikle, J R Watson, M Cumming, H d'E Darby (Members of Committee,) M Stonor, A B Lake, J C Pasqual, R Munro, A J Thackwell, S W Moorhouse, H M Darby, F Callaway, Logan Tod, Hughes, C G Glassford, R C Kindersley, S M Parry, J D Toynbee, F B Hicks, Brooke, Shepherd, Tom Gibson, (*Secretary*.) By proxy: W Coates, J McClymont, J B Douglas, Horace Brett, Q McClymont and H Tunnicliffe. Visitor, Mr. Chubb.

Experimental Gardens form a subject of discussion and the Planters' Committee formulated a scheme:

"(*a*) That a Committee or Committees be formed composed of two Government nominees and two or more resident planters in the State or States where the gardens are situated;

(*b*) That the Government allow a block or blocks of land high and low to be selected by such Committee or Committees for the purpose of cultivating economical plants;

(*c*) That the Government provide a vote of $15,000 for the first year, which will be disbursed as the Committee think most advantageous, in salary of manager, wages, of labourers, purchase of plants and other necessary items of expenditure;

(*d*) That the Committee furnish estimates for the first twelve months working;

(*e*) That applicants have the right to plants in such rotation as the Committee may appoint, always provided that one applicant shall not have a prior right to a second allotment of plants until all demands have been met in turn;

(*f*) That members of Committee shall, in rotation, undertake to inspect the books to be kept and to report on the works and areas for a fixed period of a year, and to see that the gardens are managed upon a commercial basis.

The Resident-General by his Secretary very wisely asked in reply:—

(*a*) Seeing that the States are about to be connected by railway, would it not be preferable to establish one central garden, and if so, which of the States would be most convenient for the purpose?

(*b*) Can those of the old Ceylon planters who are on the Committee explain the system on which the Ceylon garden is conducted.

To this no answer is recorded so far.

From Mr. Hill's address as Chairman we quote,—

Coffee.—Now, gentlemen, the next matter that I will call your attention to is the position of the coffee enterprise at present. As far as can be judged an estate of 300 to 400 acres in full bearing and highly cultivated can be looked upon to produce a crop of 5½ to 6 piculs per acre at a cost from $90 to $95 per acre, with the coffee delivered in Singapore, and this represents roughly 3¼*d.* to 3½*d.* per lb. in London. Now the question appears to me to be, *is* there any country where coffee can be produced at a lower rate of the

same quality? If not, our future, although dull-looking enough at the present, must brighten considerably. It should be one of the first duties of the Association's new year to ascertain as far as possible the actual cost of production in other places. This much I can tell you, that in the prospectus of the Dumont Coffee Company, which is the largest enterprise in the world of its kind, the cost of bringing an acre into bearing is given at £40 and the time that it takes before being reproductive is given at five years. You will at once see for yourselves that here we can compete with great advantage to ourselves as regards cost, and that being so our capital account will not be so heavy and we require to pay less interest to pay our way. It may interest you further to know that on an already opened labour established estate, in 37 months from the date of the plants being put out, 45 months from seed, piculs, 2 65 per acre have been gathered. These figures are given you as being of general interest and show that whilst the present depression should not be unduly magnified in its ultimate result, yet it may be the means of inducing an economical system of working, without which any enterprise is bound to suffer in the long run.

Curing.—My own opinion is that large estates will find it more economical to do their own curing, but should the tontine system be adopted with a division of profits after interest has been paid on capital invested, pro rata on the parchment supplied to the mill, the scheme might meet with general support. At the same time, it should not be overlooked how attractive store work is to the Tamil labourer as affording work to the wives of the labourers that may have families of children, for whom—I speak from experience—it is otherwise difficult to provide work.

The actual saving in cost of curing parchment on the estate and curing the coffee fit for the market as far as ascertained, is 30 cents, against which your lose the dust and increased cost of transport has to be added. We now, gentlemen, come to the all-important question of the means taken to raise the price of the coffee. I am not of opinion that, considering the state of the coffee markets, our coffee has been unduly depressed—it is a small article of trade and therefore there has hitherto been small competition for dealing in it. While Rio and Santos coffee was sold at 23s 6d our coffee was not lower than 32s to 33s at the same time. My personal opinion remains unchanged, that we should endeavour to get to the consumer and the grocer direct.

Coconuts have occupied a good deal of attention during the year and large areas have been taken up for this cultivation. It can only be a matter of congratulation to those who have seen the devastation committed in the Klang district by the beetle that the Enactment which has been under consideration has been passed in Selangor, and with the aid of those interested in coconut planting there should be little difficulty in keeping this pest in check if not in exterminating it. This is plainly shown by a coconut estate (Sigiap) in Singapore, which is practically free of beetle whilst its neighbours are in sorry plight.

"Para Rubber.—After a few words on rubber cultivation, prominently brought to notice lately, I will not detain you longer. "On one estate 38 lb. of rubber collected from 7 trees has been the year's crops. The best tree gave 7¼ lb. The trees were of various ages from 10 to 12 years. The largest yield was from a tree grown at least 16 feet above water level on an alluvial soil highly coloured with peroxide of iron. My impression is that if there is anything in favour of planting rubber on low-lying damp land it remains to be ascertained. The cost of collection may be taken not to exceed 10 cents per lb. Rubber actually free from dust and bark was sold for 3s. per lb. and the remainder fetched very nearly that price, as it contained a little dust and bark, which it is very difficult to keep it free from.

From all which we can see that Straits planters are having a turn of hard times like their neighbours.

ROYAL GARDENS, KEW, AND WEST INDIES.

We are indebted to the Director for a special copy of a bulletin containing:—

Report on the Economic Resources of the West Indies, by D. Morris, C.M.G., M.A., D.SC., F.L.S., Assistant Director, Royal Gardens, Kew.

It is introduced by a Preface from Mr. Thisleton Dyer, F.R.S., and there is a very good map of the West Indies. Each Colony is dealt with by Dr. Morris in a very interesting and practical way and we shall have occasion to refer to the Report very often and to make extracts in reviewing the state of each Colony

TEA TRADE IN RUSSIA.

The following correspondence has been forwarded to us from the Colonial Secretariat:—

Downing Street, January 21.

Sir,—I have the honour to transmit to you copy of a memorandum by Mr. T. N. Christie, formerly a member of the Legislative Council of Ceylon, with regard to the conditions of the Tea Trade in Russia. A copy of this memorandum has been referred to the Foreign Office with a request that full enquiries may be made into the matter to which Mr. Christie refers and which appears to be one of much importance.—I have, &c., (Signed) J. CHAMBERLAIN.

To Governor, The Right Hon. Sir J. West Ridgeway, K.C.B., K.C.S.I., &c., &c., &c., &c.

St. George's Club, Hanover Square, Jan. 13.

Sir,—I have recently returned from Russia, having concluded certain enquiries on behalf of Ceylon in connection with the Tea Trade there.

It is probable that as one result of my mission you will be approached from Ceylon with the view of trying to obtain the Russian Government's consent to a reduction in the very excessive import duty, 1/10½ per lb., now levied on tea entering that country, and good reasons will, I have no doubt, be given in support of such a request.

During my enquiries I ascertained certain facts which are of much importance, not only to Ceylon's trade, but to that of the Empire generally, with Russia and it might, I suggest, be well to have my statements verified forthwith, so that in the event of the representations I anticipate being made from Ceylon, there will be less delay in dealing with them.

I was surprised to find that tea entering Russia by the European Frontiers was charged a different and much greater duty than that entering by the Chinese frontier, and thus in practise a differential duty has been established regardless of the most favoured nation clause of our treaty (see extract). It might be argued that if Ceylon or Indian teas were sent to Russia through the Irkutsk Custom house, they, too, would be entitled to the lower rate, but I submit that access through that door into Russia being exclusively in the possession of one country (and that unfortunately our great tea-growing rival) the differential duty is contrary to the treaty.

While pursuing my enquiries in Moscow, it came to my knowledge that differential rates of railway freight exist between that City and Odessa. Tea arriving at the latter town in Russian ships is charged 92 kopecks per pood, while that arriving in British ships is charged

one rouble twenty kopecks per pood. This I may mention is, by the accident that the steamers of the Volunteer fleet call at Colombo, not adverse to Ceylon (and indeed favours that Colony to the disadvantage of India) but it is none the less a clear breach of sections IV and V of the treaty (see extract). At one time a great proportion of the China tea consumed in Russia passed through London, and this differential transit rate has been a factor in killing that trade. I believe the differential rate effects other goods and probably other routes, but I could not obtain positive information on that point. I informed the Consul General at Odessa, that differential rates were in existence (of which he had not previously been aware) and he at once tried to get an official statement of the tariff, but up to my advices of a few days ago he had, on one pretext or another been put off. I believe efforts are being made at Saint Petersburg to obtain the information.

I was informed in Odessa, that the trade in rice between India and Russia had been killed when the latter country concluded a treaty with Persia, under which all the goods of that country are admitted at a 5 per cent *ad valorem* duty—much less than is charged to other countries.—It is difficult to understand how such a Treaty should have been passed apparently without any protest on our side.

I have little doubt that had my enquiries been in connection with our trade generally, I would have come across other instances of unfair treatment in breach of engagements supposed to be binding.

The importance of all this becomes manifest in connection with the completion of the Siberian Railway, and in my conversations with the Moscow tea merchants (who are very influential), it was evident that some of them have already considered that question and looks for a change in trade conditions when the line is opened.

If the Russian Government maintains that differential import duty and introduces railway rates on the Odessa-Moscow principle, the trade in Ceylon and Indian teas, now about five million lb. per annum, will be killed, and there will, in various directions, be most serious further diversions of goods from British Channels if the existing treaty clauses are ignored.

I understand that Russian merchants are representing to their Government how British trade has benefited at the expense of Russian by the Kara sea free ports, and the question of discontinuance of such free ports and the policy to be pursued in connection with the Siberian railway must now or very shortly be under consideration, and it would seem to me opportune and of great importance that when such tariff arrangements are being discussed, Her Majesty's Representative in St. Petersburg should have his attention directed to the circumstances which have given rise to this letter.

A reduction of the European tea duty to the same level as the Siberian should be aimed at, but failing that the increase of the latter to the same rate as the former would greatly benefit British interests.

I annex extracts from the Treaty of 1859 and a translation of that portion of the Russian Customs tariff relating to tea.*—I am, &c.,

(Signed) THOMAS NORTH CHRISTIE.

The Right Hon. the Secretary of State for the Colonies.

* See next column—ED. *T.A.*

TREATY OF COMMERCE AND NAVIGATION

BETWEEN HER MAJESTY AND THE EMPEROR OF ALL THE RUSSIAS, OF 1859.

ARTICLE II.—No other or higher duties shall be imposed on the importation into the dominions and possessions of Her Britannic Majesty, of any articles, the growth, produce, or manufacture of the dominions and possessions of His Majesty the Emperor of all the Russias, from whatever place arriving, and no other or higher duties shall be imposed on the importation into the dominions and possessions of His Majesty the Emperor of all the Russias, of any article of the growth, produce, or manufacture of Her Britannic Majesty's dominions and possessions, from whatever place arriving, than are or shall be payable on the like article, the growth, produce, or manufacture of any other foreign country: nor shall any prohibition be imposed on the importation of any article the growth, produce, or manufacture of the dominions and possessions of either of the two contracting parties into the dominions and possessions of the other, which shall not equally extend to the importation of the like articles being the growth, produce, or manufacture of any other country.

ARTICLE IV.—The same reciprocal equality of treatment shall take effect in regard to warehousing, and to the transit trade, and also in regard to bounties, facilities and drawbacks, which are or may be hereafter granted by the legislation of either country.

ARTICLE V.—All merchandise and articles of commerce, the produce or manufacture either of the dominions and possessions of His Majesty the Emperor of all the Russias, or of any other country, which are or may be legally importable into the ports of the United Kingdom of Great Britain and Ireland, its dominions and possessions in British vessels, may likewise be imported into those ports in Russian vessels, without being liable to any other or higher duties, of whatever denomination, than if such merchandise and articles were imported in British vessels: and reciprocally, all merchandise and articles of commerce, the produce of manufacture either of the United Kingdom of Great Britain and Ireland, its dominions and possessions, or of any other country, which are or may be legally importable into the ports of the dominions and possessions of His Majesty the Emperor of all the Russias, in Russian vessels, may likewise be imported into those ports in British vessels, without being liable to any other or higher duties, of whatever denomination, than if such merchandise and articles were imported in Russian vessels. Such equality of treatment shall take effect without distinction, whether such merchandise and articles come directly from the place of origin, or from any other place. In the manner, there shall be perfect equality of treatment in regard to exportation, so that the same export duties shall be paid, and the same bounties and drawbacks allowed, in the dominions and possessions of either of the high contracting parties on the exportation of any article which is or may be legally exportable therefrom, without distinction, whether such exportation shall take place in Russian or in British vessels, and whatever may be the place of destination, whether a Port of the other Contracting Party, or of any third Power.

ANNEXURE.

Translation of section 20 of the Russian Customs Tariff official edition of the Department of Customs of the Imperial Ministry of Finances, printed in 1894.

Tea of all kinds imported at the European Customs Houses pay duty Roubles 21-gold per Pood (of 36 lb. English).

OBSERVATION.—Tea of all kinds imported through the Irkutsk Custom House and at the South of it over the Siberian and Steppe Region frontiers pay a duty *:—(a) On Baikhoff Black, flower, green and

* Literal translation from the Chinese—"little white hairs." It was the name originally given to flowery teas with perfectly white tips—Later on all teas passing through Kiachta got the name of Baihovoi.

yellow teas. 13 Roubles gold per Poud: (b) On brick teas Roubles 2·50c gold per Poud: (c) On teas in Slabs accompanied by Consuls certificates as to their being prepared in Russia and with the names of Russian fabricants on each slab 10 Roubles, gold per Poud.

RATES OF DUTY ON TEAS.

European frontiers Roubles 21 gold, per Poud or £10 10s 8d per cwt.=1s 10½d per lb. English.

Siberian Roubles 13 gold, per Poud or £6 3s 4d per cwt.=1s 2d per lb. English.

KOLA IN THE FRENCH SOUDAN.

Great quantities of kola-nuts are imported into the French Soudan. In French territory it is only found at Kissi, and as it is the most common article of exchange in the country, it is brought thither from other parts. The value of this import in 1896 was 1,350,000f., or about 24,500,000 nuts, the price varying from 2·50f. to 15f. the hundred nuts, according to the origin, and also according to their size and colour, the pink nuts being more highly esteemed than the yellowish-white ones. The kola nut is much appreciated for its medicinal property as a tonic, but it is also in great request in certain native ceremonies, such as betrothals, marriages, &c.—*Chemist and Druggist*, Feb. 26.

VANILLA.

At the meeting of the New York College of Pharmacy held on January 18 five papers were read on vanilla. Professor Rusby treated of the cultivation, &c., of vanilla. He said that there are thirty-three species of vanilla now recognised. The process of curing vanill-pods and preparing them for packing was described as he had seen it done in South America. Vanilla-packers, he mentioned, are subjected to poisoning, resulting from handling the beans, the symptoms being much like those resulting from poisonivy, due, he thought, to penetration of the skin of the hand by oxalate-of-calcium crystals. Dr. S. E. Jelliffe treated of the microscopy of the subject, and said unscrupulous dealers often used benzoic acid to make a false appearance of vanillin on the beans. The microscope revealed the fraud readily, benzoic-acid crystals being flattened and rhomboidal, vanillin acicular and standing out at right angles from the surface of the fruit. Professor V. Coblentz treated of the chemistry of venillin, and said it was frequently adulterated with acetanilid. Mr. A. Henning's paper was on the commercial varieties of vanilla. He said that that from the Seychelles Islands, an inferior kind, was the sort chiefly used in England. The Maxican vanilla grown at Papantla had the most exquisite odour, and was the kind used in the United States. The pharmacy of vanilla was considered by Mr. O. Kalish, who recommended an extract made from a formula containing 8 oz. of vanilla in a vallon of finished product. He said that vanillin could never displace vanilla as a flavouring-extract, as it lacks the delicate flavour of the natural bean.—*Chemist and Druggist*, Feb. 26.

TEA IN AMERICA.

NEW YORK, Feb. 16.

Quotations on invoices unchanged. The tone of the market continues firm on greens. Low-grade Japan and other sorts steady.

Recently a trip through New York State demonstrated that the conspicuous sign in the grocers' windows is of some sort of Ceylon or India tea. They are growing in favor, and it looks as if the prophecy of an old veteran in the trade would soon come true, viz.: "Ceylon and Indian tea are to be the tea of the future."

Below will be found additional and amendatory regulations in regard to the importation and inspection of tea under the act approved March 2, 1897. This circular has been sent out by Lyman J. Gage, Secretary of the Treasury, under date of February 7, to collectors and other officers of the customs. It is as follows:

"The following standards for imported teas are substituted for those prescribed by Circulars No 69, of April 21, 1897 (Synopsis 17,995), and No. 186, of November 6, 1897 (Synopsis 18,554):

"First.—No. 1, Formosa Oolong; No. 2, Foochow Oolong; No. 3, Amoy Oolong; No. 4, North China congou; No. 5, South China congou; No. 6, India tea; No. 7, Ceylon tea; No. 8, Pingsuey green tea; No. 9, (*a*), country green tea (Young Hyeon) No. 10 (*b*), country green tea, (Hyson); No. 11, Japan tea, pan-fired; No. 12, Japan tea, sun-dried; No. 13, Japan tea, basket-fired; No. 14, Japan tea, dust or fannings; No. 15, scented orange pekoe; No. 16, capers; No. 17, Canton Oolong; No. 18, scented Canton.

"Second—In order to promote uniformity in the methods of examination of teas, they include the following rules, recommeuded by the Board of Tea Experts, are prescribed.

"Testing for dust.—The dust and fannings in all Formosa, Fooshow, and Amoy Oolongs, Canton teas, congous, Indias, and Ceylons must be restricted to 10 per cent when sifted through a sieve of No. 16 mesh made of brass wire. In order that the needle leaf and pekoe tips may not be confounded with dust, they must be returned with the dust to the sieve for a second and third sifting until separated.

"In the case of Ceylon and Indian teas, the needle leaf and pekoe tips shall be separated by passing them together with the dust through a No. 26 sieve of brass wire, after the tea has been first sifted through a No. 16 sieve.—*American Grocer*."

COFFEE AT LANDSBOROUGH, QUEENSLAND.

[It is interesting to Ceylon planters to see how "pioneering" with coffee is carried out in Queensland.—ED. *T.A.*]

The success which has attended the cultivation of coffee the Buderim Mountain has at different times reduced selectors on the Blackall Range to start the industry in a small way, and these experiments have shown that the soil and climate in certain localities in the district are eminently suitable to the coffee plant. Two or three years ago a company was formed in Brisbane for the purpose of growing coffee on a large scale about twelve miles from Landsborough, on the North Coast line, and some 40,000 coffee plants were raised, and a few acres were planted out. The method adopted by the manager, Mr. Waldegrave Thompson, who had gained his experience in Ceylon, was to brush the scrub, burning off all undergrowth up to six inches in diameter, and leaving the large trees standing to serve as shade.

The experiment for various reasons proved a failure and when the plantation was purchased twelve months, ago by W. Mr. Bartlett the whole of the plants had died off owing to the neglect.

Mr. Barlett set to work energetically to reform the plantation and the nurseries. He found the nursery established on a flat beneath a ridge, subject to the washing-down of soil during heavy rains. He abandoned this spot, and located the seed beds and nurseries sixty feet higher up the bank, and close-paled it all round, surmounting the posts with a barbed-wire fence. He obtained some 500 plants of good varieties of coffee from the Department of Agriculture, and set them out in a nursery 80 feet long and 50 feet wide. He next planted out some 200 of the largest of these trees 9 feet apart, and they are now growing vigorously. Two thousand five hundred plants raised from seed have been planted in the nursery at a distance of 6 inches by 3 inches, and these will be ready to be transferred to the permanent plantation next season. In addition to these

there are 20,000 plants of Arabian and Liberan coffee, all looking healthy and vigorous. Some seeds of fine Mocha were obtained from the Agricultural Department about three months ago, and they have outstripped all the other seedlings so far. Mr. Bartlett finds that the local seed is so far before that received from Cairns. The latter seems to do better in the hotter Northern climate than in the comparatively cool climate of the South, whilst the former exhibits a far more vigorous growth. The best seed of all is that obtained through the Department from Mr. Grieve at Broadwater.

In clearing the land, all the timber except the native plum trees is burned off, the plum trees being left about 30 feet apart to afford the necessary shade. The standing scrub on the boundaries of the estate breaks the force of the winds. Belts of scrubs will be preserved at intervals of chains, and as a further protection rows of olive trees will be planted. Of these thirty are already planted out, and 100 truncheons are, with the exception of three or four, giving promise of healthy trees. Mr. Bartlett says the Blanckall Range is undoubtedly the home of the olive tree. Two rows of coffee plants will be planted between the olives this season. Coffee will also be planted between fruit trees on a 3-acre orchard which has been cleared some eight years ago. Frost is not to be feared here, the thermometer in winter ranging 15° F. higher than on the site of the original nursery. The land faces the south-east, with a gentle slope towards Ubi Ubi Creek, which is always running. In addition to the main crop of coffee and olives, there are plots of arrowroot, sugar, maize and lucerne, whilst in the orchard may be seen bananas, apples, oranges, loquats, pears and a large bed of splendid rhubarb. The Giant Tomato has also been planted. The cultivation is fenced in with 14-gauge 36 inch wire-netting with a barbep wire 9 inches above the netting to keep out the marsupials. The whole of this work has been accomplished in twelve months, and it is anticipated that three years will see the estate self-supporting.—*Queensland Agricultural Journal.*

A CIRCULAR FROM MEXICAN SHIPPERS OF VANILLA BEANS.

The principal Mexican shippers of vanilla beans have forwarded to their New York correspondents a circular letter contradicting certain published statements concerning the crop and the present position of stocks. Reports that the actual vanilla crop of Mexico will amount to about 75,000 pounds have been widely spread, while it can be safely stated that the output this year and for several years to come will not reach 35,000 pounds, including the vanilla cuts, due to the havoc wrought to the vanilla plants during the frost of 1895, which were not replanted owing to the long drought of the same year and of 1896 and part of 1897. It will take some time to replace them, and then three or four years must elapse before they begin to yield crop. It is well known that the Mexican vanilla has the most delicate flavour, and its worth in every market is double or three times greater than that of other vanillas. Manufacturers of extracts in the United States know well that the active principle of Mexican vanilla is not only the most delicate; but also that it yields a grater percentage of essential oil. These are the principal reasons for the difference in value. The rise in prices is due to the insignificance of the last crops and the coming ones, economical reasons that regulate the supply and demand. And to this we may attribute the fact that at present vanilla from the French colonies is also worth twice as much as it was before.—*Oil Paint and Drug Reporter.*

MINOR PRODUCTS.

London, Feb. 24.

Coca Leaves.—There is still nothing doing in these leaves, and good *Truxillo* kind remains nominally worth 8d.

Oil of Citronelle.—This is again a little easier, business having been done in 40 lb. tins this week at 1s. 2d., spot.

Oil of Lemongrass.—A reaction appears to have taken place in this oil. The market will probably now become more settled, as it is understood that nothing for arrival is to be had before July-August shipment. The present price of spot stuff is 5d., and for July-August stuff 4d. c.i.f. is looked upon as a bid probably acceptable.

Cinnamon.—Damaged *Chips*, of which 22 bags were offered at auction this week, sold at 2⅜d. *Quills* are firmly held, and in anticipation of next Monday's auctions, holders are not anxious to do business; prices are nominally the same.—*British and Colonial Druggist*, Feb. 25.

COCONUTS IN THE N.-W. PROVINCE.

COCONUT CULTIVATION

and if nothing unforeseen occurs, coconut crops will be good. But prices are very disappointing and have been during the whole of last year as well, thereby seriously affecting the income of estates. A consolation is always found in having companions in distress and coconut estate proprietors have the grim satisfaction of knowing that the ramifications of exchange have smitten their tea-planting brethren as well. Dividends of prosperous Companies have been reduced by a half.

THE NEXT SANTOS COFFEE CROP.

There was a meeting at the Associação Commercial in Santos on the 1st inst. to receive the reports of the commissions appointed to estimate the next coffee crop marketed at Santos. These commissions were instructed to visit the districts assigned to them and obtain the best information possible. They reported as follows—the districts being the three main railway systems of the state of São Paulo.

Total estimate of Santos crop: 4,250,000 bags.—*Rio News*, Feb. 8.

THE LATEST IN BARK AND QUININE: MANUFACTURERS *VS.* PLANTERS.

Cinchona Bark dropped 20 per cent. in price at the last Amsterdam auctions, but over 60 per cent. of what was offered was either bought in or withdrawn. That much we told our readers last week. We have now to add that quinine has been reduced 3d per ounce in price by the leading English manufacturers, and 2d per ounce by the large German makers in the combination. This seems a simple relation of cause and effect, but we are all accustomed by this time to look for something much more mysterious than such an easy explanation in the case of cinchona bark and quinine, and very few amongst the large buyers and sellers of quinine who have thought about the subject, have contented themselves with such a solution.

It is the same with us, as our readers must know from what we have said on previous occasions. There has not been a case of a natural drop in bark followed by a natural drop in the refined product made from it. We know that strenuous efforts have been made of late to keep up the price of cinchona bark to the satisfactory level it reached two auctions ago, and we conclude from fairly obvious signs that perhaps equally strenuous, probably better managed, and certainly more successful efforts have been made to reduce the price. What was the reason for this latter form of energy? If we bear in mind one or two of the latest developments in the quinine and bark markets we shall find one of the most satisfactory explanations. Java bark growers and importers have at last shown a willingness to com

bine for their own good. They have even seriously set on foot and brought to a head at one spot an attempt to handle their product all along until it is ready to go in the most easily used form to the cousumer. Such an effort, if wholly successful, would be little short of disastrous to the already established makers of quinine, and these are using every means to break down such an organisation. They wish to show the bark sellers that it is no good their combining to keep up the price, for the latter is twice reduced, just after the combination is effected. And then when Java quinine, as we told our readers last week, has reached Amsterdam, and as we hear is now in London, in New York, and in Havre, they take the readiest means of reducing the value of the Java alkaloid by dropping the price of their own, at the same time leading the planters in Java to think that it would be better to come to terms with them, say by supplying bark to the proposed factory in Java, or in any other way which the manufacturers wish.

That is our deduction from information we have published and more which we have received and not published from various sources. The drop has no doubt come as a disappointment to many second-hand holders of quinine, but in spite of this dejection they show a noteworthy determination to hold on to their stock, and for this course they have good grounds to support them. There is much to indicate that this decline can be only of a temporary character, and that quinine must go forward again very shortly.—*British and Colonial Druggist*, March 4.

QUININE DOWN AGAIN.

"Never prophesy if you don't know" is an adage peculiarly applicable to quinine. The cheapening of cinchona-bark at the Amsterdam auctions last week suggested a fall in quinine, but manufacturers of the alkaloid have not been in the habit of fluctuating its price with the rise and fall of bark. That is a fact of which statistics are eloquent. Why, then, did they reduce the price of the alkaloid 2*d.* per oz. on Tuesday? Several reasons are given, the most likely being that, owing to the almost entire absence of purchasers during the past three months, the manufacturers are getting full up with the alkaloid, and, as second-hand holders have been quietly unloading at about 1*s.* per oz., the reduction is intended to meet them. It is also known that one or two small makers have benefited by the recent comparatively high price, but the threatened invasion of Batavian quinine is the most serious thing for the manufacturers' convention. Up to the present, little of this quinine has been seen; but it is on the spot, more is on the way, and its increase is only a matter of time. Therefore the present is the best time for the European manufacturers to squeeze it out. Our information from Java is to the effect that at least one quinine-factory is in full swing there, and another is in the course, of fitting, so that the competition from that source is real, and has to be reckoned with. It would, however, be folly to calculate on a period of gradually-diminishing prices in the near future. Rises and falls in quinine are now chiefly of interest to speculators, who have been so often bitten that they are now exceedingly judicious in buying. The consumers' interests are not seriously threatened so long as the bark-producers and the quinine-manufacturers are contending parties. It happens that the end of the three months' trial of the bark-sellers' combination is synchronous with the fall in quinine, and it may be that bark will go cheaper; but, as we have already pointed out, there is little relation between the unit and the price of quinine. The unit now is 5½c., quinine 11*d.*; at this time last year the unit was barely 3c. and quinine was 8½*d.*; and when the unit doubled (6½c.) quinine was 12¾*d.* But quinine has been sold at that when the unit was 3c. We must look to the men, not to the materials, for a solution of the riddle. We do not happen to be gifted with second-sight, but the falling clause, which one manufacturer announces that he will add to contracts, seems to be significant of much. —*Chemist and Druggist.*

RECENT PATENTS.

The following are abstracts of recent specifications of inventions for which English patents are applied for. The complete specification of any patent can be obtained by purchase through any money-order office, where postcards price 8d. each, for ordering patents are obtainable. The number of the patent and year are specified at the end of each paragraph:—

Preparation of Tea for the purpose of rendering the infusion more digestible.—J. A. Martin, grocer, and F. Davis, analytical chemist, London. Moisten tea with a solution of gumarabic, or gelatine, or albumen, and, while it is still moist, sprinkle with a powder composed of:—Tartrate of soda, 2; neutral tartrate of potash, 1; sulphate or soda, 1 bicarbonate of soda, 2; and dried carbonate, 16; with the object of preventing the prejudicial effect of the tannin. (27,460, 1897.)—*Chemist and Druggist*, March 5.

NEW METHOD WITH CHINA TEAS.

A Shanghai correspondent writes us by last mail: It may possibly interest you to learn that a company is being formed to make tea by machinery entirely under Chinese auspices, to be under the safe protection of H.E. the Viceroy Chang-chi-tung, and the finances to be controlled by the foreign Commissioner of the Imperial Customs at Hankow.

The scene of operations to be commenced is in the Oopack district of Yung-low-toong, some distance above Hankow, where godowns are already in existence, which were used by Russians some years ago. Capital R80,000, in 800 shares of R100 each, grantable to and holdable by respectable Chinese.

Experts are to be engaged from Ceylon, in the first instance, to instruct the natives in the method of working machinery. Some machinery has been ordered from home, and more, we understand, is to be ordered in Ceylon, where a gentleman has gone to have a look all round at the situation there.—*L. and C. Express*, March 4.

THE MADRAS PADDY CROP.

The Madras paddy crop is reported to be damaged by insects in parts of the Godavery and Malabar Districts, diseased in North Arcot, and withering in the Carnatic District. Elsewhere the condition of the crop is reported to be fair. The average outturn for the whole Presidency is estimated at 66—the normal being represented by 100. It is probable that the total area cultivated during the whole year may come up to 6,968,200 acres and the corresponding yield may amount to 57,944,700 cwt. of cleaned rice, or about 20 per cent more than in the previous year.—*M. Mail*, March 19.

PLANTING NOTES.

Cocoa-Butter.—The result of the Amsterdam auctions is reported in a separate paragraph. At the London auctions, 50 tons of *Cadbury's* make were sold at fluctuating prices, the average working out at about 9¾d, against 9½d, in February and 9 9-16th d in January.—*British and Colonial Druggist*, March 4.

Lemon Grass Oil.—The botanical origin of this oil is a matter of some doubt, and it is probable that various species of Andropogon are used in its preparation. Siedler states that various species of these grasses belonging to the Andropogon family flourish in German East and West Africa as well as in East India, which yield an essential oil. It is possible that these colonies may shortly export this oil.—*British and Colonial Druggist*, March 4.

PROSPECTING FOR PLUMBAGO.—We learn from Madawelatenne that Captain Tregay is still very busy prospecting for plumbago and seems as sanguine as ever.

EUCALYPTUS TREES have grown so well in the Nilgiris that they threaten to push houses, near which they grow, out of existence, and steps are to be taken to have them felled.—*Chemist and Druggist.*

A DRY REGION!—The rainfall of Santiago, Chili, last year measured 335·20 millimetres [nearly 13¼ inches.] The mean average for the last 31 years was 328 millimetres [nearly 13 ins.] The rainy months are May, June and July, the rainfall in May last year measuring 206·48 millimetres [nearly 8 1-6 inches.]

RISE IN RUBBER.—In consequence of the advance in the price of crude rubbers, the principal firms (seventeen in number, and several of the first importance) notify—says the *British Trade Journal*, March 1st—the trade that their prices for mechanical rubbers are advanced 10 per cent. from the 10th ult.

JAVA QUININE.—We (*British and Colonial Druggist*) heard a few weeks ago that a quantity of quinine sulphate made by Bandoeng quinine factory in Java, to which we have referred several times of late, was on its way to Europe, and our Amsterdam representative now says that 21 cases of quinine, each containing 12 tins, holding one kilo, have arrived in Amsterdam per ss. "Talaman" from Java, and will probably come very shortly on the Amsterdam market.

KOLA NUTS.—According to Knebel, who discovered kolanine in kola nuts, this glucoside is broken up under the influence of a special ferment, into caffeine, glucose, and a red colouring matter. He considered that the action was not completed till the nuts were dry, and that, therefore, the dry nuts contained a relatively greater amount of caffeine than the fresh nuts. François has, however, examined the fresh and the dry nuts very carefully, and finds that dessication does not at all alter the proportion of caffeine contained in the nuts (allowing for the moisture driven off, of course); nor are the nuts containing the greatest proportion of red colouring matter richest in alkaloid, which should be the case, according to Knebel.—*Repertoire de Pharmacie.*

AMSTERDAM BARK MARKET.—Our Amsterdam representative sends us further information concerning the Amsterdam bark auctions of last week. The bark offered was distributed among the following species and varieties: Succirubra, 36,626 kilos.; Ledgeriana, 508,162 kilos.; Calisaya, 368 kilos.; Officinalis, 1,992 kilos.; Hybridis, &c., 36,424 kilos. Root Bark formed 43,942 kilos among this. Our readers would notice that in the haste of going late to press with last week's telegram, the separate purchases were added up incorrectly, the total sold amounting really to 12,223 kilos of quinine, which left 16,724 kilos unsold. A printer's error made the purchases of the Frankfort and Stuttgart factories appear as 70 kilos instead of 0 kilos.—*British and Colonial Druggist*, March 4.

WOOD OIL.—The Consular Department at Washington have been collecting information relative to the source of wood oil, so extensively used by the Chinese as a varnish. Woodwork in China is almost universally varnished with this oil, and on native crafts on the inland waters of China the oil takes the place of paint. Owing to its poisonous nature, it is suggested as a useful component of ships'-bottom compositions for preventing marine growths. The exploitation of the wood-oil tree promises to reveal the secret of Chinese india-ink, as it is stated that the sort produced by burning the wood oil is the basis of the most expensive kind.—*Chemist and Druggist*, Feb. 26.

MINERAL PRODUCTION IN INDIA.—The following table shows the products for 1896 as to which reliable statistics of output are available according to Dr. Geo. Watt, C.I.E.:—

Salt	..	..	1,026,744 tons.
Coal	..	..	3,848,013 ,,
Iron ores	..	..	13,776 ,,
Petroleum	..	..	15,057,094 gallons.

THE COPPERAH MARKET.—The market is in a very unsteady state. Top prices were given during the week for all kinds and grades. "Carts" are seldom bought and the arrivals of boats during the week were up to the average. As much as R42·25 per candy was paid, but the average for the week for well-dried Calpentyn was R41·50. Maravilla, Negombo and Madampe fetched R38 to R40 per candy. It is believed that a large stock will be brought down to the market before long, as it is usual to receive a large quantity before Easter and the Sinhalese New Year. This time the stock will be greater than the corresponding season of last year, as the crops are expected to be heavy after the last small season. Owing to the prevailing prices in the market, the price of coconuts has in a measure gone up. They are also scarce, as dealers prefer to convert them into copperah and secure top prices, rather than sell them for desiccating and shipping purposes.—*Cor.* of the "Examiner."

WATTEGAMA: TEA PRICES.—There seems great differences in prices of tea on estates close to each other in our district. Is it in the strength of the soil or in the maunfacture?

G		H	W	M
1,265 broken pekoe	·49	2,665 at ·41	500 at ·39	1,623 at ·34
1,650 pekoe..	·35	1,040 at ·32	595 at ·31	1,321 at ·28
810 pekoe souchong	·24	570 at ·29	680 at ·23	1,120 at ·21
160 dust ..	·18	225 at ·15	62 at ·15	32 at ·10
50 Souchong	·20	— —	40 at ·22	20 at ·13
average	·38⅛	·35¾	·28¾	·28¼

WOOD ASHES FOR FLOWER GARDENS.—There is no particular difference between equal weights of ashes from hard or soft wood. The reason for the erroneous common opinion on this point is due to the lightness of soft wood ashes, which makes it necessary to use a very large bulk of them to get the equivalent of a small bulk of hard wood ashes. As to using ashes as a substitute for stable manure where the latter cannot be obtained it must be said that ashes are only a special fertiliser containing potash and a little phosphoric acid. Stable manure contains these and adds a considerable content of nitrogen, which is usually the greatest need in flower growing. For this reason ashes do not make a good substitute for a stable manure, but in ashes and nitrate of soda the various needs of the plants are ministered to. If leaf mould is to be had, its use in connection with ashe should produce good results.—*American Agriculturist.*

USES OF COCONUT OIL.—An Indian journal says that in that country a large amount of native soap is made from coconut oil by merely boiling it with dhobies' earth (impure carbonate of soda), salt, quicklime, and water. The ley apparently is not prepared separately as a rule, nor with any attention to causticity. Coconut oil is still used to some extent in India as an illuminant by the wealthier classes, and almost universally for culinary purposes, also for anointing the body, and as a hair oil. European, American, and native doctors also apply it in many ways as a medicine. In candle making, coconut oil is not nearly so much employed as it was in former days, palm oil and other materials having to a great extent superseded it, as have palm kernel oil and earth-nut oil in the case of soap making.—*British and Colonial Druggist*, Feb. 25.

Correspondence.

To the Editor.

TEA PLANTING IN FIJI; THE "*T.A.*"

Wainunu Tea Estate, Wainunu, Fiji,
22nd Jan., 1898.

SIR,—I note in the issue of November 1st, 1897, of your valuable paper, your comments on "Tea Planting in Fiji." There seems to me to exist a slight misconception with regard to the Labor question in this Colony. It is to a certain extent correct, that "scarcity and dearness" of labor are one of the drawbacks; although I presume you refer to the local supply only, viz., Fijians and Polynesians, and not to Indian coolies, who have never yet been obtained for this industry, and for its systematic working. A greater drawback is scarcity of capital, to enable the industry to be profitably carried on, by the introduction of the requisite labor supply, viz., the Indian cooly on similar terms, to the working of the Sugar Companies in this Colony—which were last year £13 7s 7d per caput for five years' term of indenture, and whose rate of wage is 1s (one shilling) per task per man and 9d (nine-pence) per task per woman. By arrangement on application a good percentage of women and children could be included in the number applied for, for tea garden purposes. It can hardly be said, that there is any scarcity in the supply of the cooly. As regards all other native laborers, except for certain works, they are out of the question, being unsuitable, unreliable, and too expensive in every way, and for the regular and systematic work of the tea garden, nowise adapted. But on the question of the Indian labor supply, there is much to be said in favour of this colony for tea growing, and even too favourably compare with other tea-producing countries; when it is taken into consideration the increasing cost and difficulties, of obtaining and keeping a trained body of labor in districts, where many hands are required at one and the same time. And for the production of good tea, at its lowest cost,—trained pruners and pickers, are indispensable, the 5 years' term of service to the plantation, and further five years residence in the Colony, give this requisite supply of skilled labor. It is true that the rate of wage is far too high, which is only too evident in many ways; but it is only reasonable to hope, that by a combined effort on the part of the Planters, and with the favourable consideration of the Government, that some reduction could be effected, and to meet the necessities of the various industries will be made, as in that direction appears to be the necessary alterations of labor conditions, to which you very rightly refer.

There is no doubt that when coolies were first introduced to induce them to come to a new and untried country, and the purchase of their food supplies being an unknown quantity, the higher rate of 1s and 9d per task respectively, was fixed upon; but when it is taken into consideration that this Colony has been found to be so well adapted to the Indian cooly, by reason of its extremely healthy and excellent climate, for working in, also the abundance of everything in shape of food and further the large sums of money and property these Indians are amassing, it is beyond all doubt, that 9d per task per man and 6d (sixpence) per woman would be an ample wage, more especially for the light and agreeable nature of the work on tea gardens, and it is imperative that something must be done in this direction.

All the other essential conditions to the successful production of tea in this Colony, are most favourable. The tea itself is of a most useful character; in cup, it is clear and soft having sufficient body and strength without too much astringency or pungency, being in medical opinion an excellent tea to use.

There is abundance of good land—land exactly suitable for cultivation of tea.

Every facility exists for means of access and transport, as the tea can be loaded on board vessels at the factory door. There is an ample water supply for power purposes, in the numerous streams that abound. Good fuel is plentiful and ready to hand. The climate is all that can be desired for tea, and for health also, which cannot be said of most tea-producing countries; the tea flushes freely nine months out of the twelve.

On the question of cultivation, it is found here, on this estate, that the Planet "Junior" Horse Hoe, works very successfully, giving excellent results, both as regards cheapening cost of upkeep, and in improvement in the bushes, (all being 6 × 6 and 6 × 3 planting). They leave but little weeding to be done by hand in between the plants; by keeping them going round the blocks, no weeds can grow, while the soil is kept beautifully loose and friable. There is no wash, and no harm to bushes in any way. One Indian with a horse does from 3 to 4 acres every day. Of course for this style of cultivation, a suitable lay of land is necessary, but of such there is abundance, viz., very slightly undulating table-lands at suitable elevation. The system allows the tea to be worked with a smaller force than would otherwise be necessary; the tea also flushing steadily for 9 months, permits of the flushes being taken off, with a smaller force of labor than is possible, where they come on with a rush and shut up in the cold weather.

There is much more that could be said, but I will not trespass on your valuable space anymore.—I would here like to mention, how much your *Tropical Agriculturist* is appreciated and what a usefull work it is, more especially to those who are engaged in new and distant countries. I trust the foregoing, will give you and your readers, a more correct and hopeful opinion of tea-growing here, and of the value of tea-property in this Colony; also that it may serve to show that we have good reasons for hoping to obtain something like a decent return, for all the years of hard work and anxiety we have put in, in bringing this tea to its present position.—I am, yours faithfully,

G. LE BARRATT.

"ARTOCARPUS NOBILIS"—A QUERY?

Bentota.

DEAR SIR,—Can any of your readers kindly let me know whether there are two varieties of the "Gan Del" (Artocarpus nobilis). If so, what difference is there between the trees. I have seen a tree with leaves somewhat like those of the bread-fruit, which the natives say is a young plant of the "Gan Del;" but when asked why the leaves are divided they say they change when grown up. Is it possible that such a transformation could take place during the growth of the tree?

I may also mention, that I have seen a "Gan Del" tree possessing a single branch with leaves like those of the bread-fruit; also a young 'jak' tree possessing a few divided leaves and young "Gan Del" plants with the ordinary leaves.—Yours faithfully, "INQUIRER."

[In Ferguson's "Timber Trees of Ceylon" there are four varieties given of Artocarpus:—"Nobilis" or "Delgaha" of the Sinhalese; "Integrifolia" or "Kosgaha," Jak; "Incisa" or "Ratadel," Breadfruit and "Lakooeha" or "Kanna-gona-gaha" of the Sinhalese. Can there be confusion between the first and last in the Bentota district?—ED. *T.A.*]

DEAR SIR,—In reference to "Inquirer's" letter it is not by any means a rare occurrence for the leaves of young plants to be totally different in outline from those of older plants of exactly the same kind or even of older branches of the same tree. A good example of this transition of form is seen in *Aleurites triloba*, the Tel-kekuna of the Sinhalese, or "Candle-nut" of Europeans. This in the young state has the leaves distinctly three-lobed, hence the specific name; but as the plant attains to some feet in height, the leaves gradually lose their lobed character and become perfectly egg-shaped, thus puzzling persons who look only to grown-up trees for the origin of the specific name.

Regarding the query put by "Inquirer" however, *Artocarpus nobilis*, the Gan-del, Wal-del, or wild Breadfruit, is a distinct species, not a variety, and, as far as I have observed, does not have the leaves lobed or divided in the young state. In this respect probably *Artocarpus incisa*, the Rata-del or real Bread-fruit, has been mistaken for the former, the specific name denoting the particular described by "Iuqnirer." This has large and deeply "cut" leaves, the segments being again "cut" in the edges, and is altogether, in most opinions, a more noble tree than *A. nobilis*, despite the name. The fruit of *A. incisa* (Breadfruit) is usually quite round, coutains no seed and is, perhaps on this account, much more in favour with curry eaters than tho long oval-shaped wild Breadfruit.

Artocarpus Lakoocha, or Kanna-gonna, is also equally distinct both in general appearance and in the fruit, which is much smaller than that of the other two above mentioned, and cau scarcely be considered edible in comparison with them. There are of course several recognized varieties of *Artocarpus integrifolia* (jak), some being much better appreciated than others by the natives.—Yours faithfully,

DEL JATHI.

Bentota, March 5.

DEAR SIR,—There is no confusion between "Arto-carpus Nobilis" and "Arto-carpus Lakoocha" in the Bentota district. "Inquirer" has not often seen "Gan-Del" trees when young. In fertile places the young tree has leaves similar to those of the bread-fruit or "Arto-carpus Incisa." The leaves change when the tree grows old. But, according to the quality of the timber, there are four distinct species of "Gan-Del." They are "Haburu-Del, Patta-Del, Alu-Del, and Meeau-Del." The first word in each case will explain the quality of the timber. Of these, the last two are valuable and the first two very inferior timber. The timber of "Haburu-Del" easily breaks in pieces, and that of "Patta-Del" is somewhat tough. "Alu-Del" has an ash colour and "Meean-Del" timber is like the horns of a buffalo, hard and strong. But in all cases the tree looks alike. "C."

MANGIFERA INDICA—THE MANGO TREE.

SIR,—Dr. Dey's notes* give valuable and reliable information and I make the following quotations from it:—"Esteemed by both Europeans and natives as the most delicious of Indian fruits. The *ripe* fruit is very wholesome, nourishing, and highly antiscorbutic; the unripe fruit is made into refreshing *sherbets* and custards, into pickles and preserves, as a sour ingredient in certain curries, and as the principal ingredieut of the chutnies so popnlar in Indian cookery and exported to Europe. The kernel inside the large flattened 'stone' or seed contains about 10 per cent of taunic acid, of which an enormous quantity mnst be wasted each mango season, the seeds not being ntilized.

"The pulp of the ripe fruit contains a trace of gallic acid, with citric acid and gum: the nnripe fruit contains about 20 per cent of free acids, tartario, citric and malic. The bark of the tree contains taunic acid and from it exudes a pink-coloured gum partly soluble in water. The fruit exudes just before ripening a resinous substance with an odour of turpentine. The blossom is regarded as astriugent.

"*Medicinal uses.*—The powdered kernel of the seed, called *amar kusi*, is used as an astringent in diarrhœa, and as a remedy, also as an anthelmintic. A fluid extract of the bark has been recommended in hemorrhages. The popnlar idea among Europeans in India that the mango fruit is productive of boils and skin eruptions is a fallacy, and has probably arisen through the coiucidence of the occurrence of those symptoms with the mango season, the end of the hot season and the beginning of the rains. On the coutrary as has been indicated, it is a valuable antiscorbutic, unless when used *immoderately*."

I have italicised the words *ripe*, and *immoderately* so as to lead to the accepted view that only ripe fruit should be indulged in and that the delicious flavour should not be allowed to cause excess of indulgence. The *unripe* fruit should be always cooked in some manner of preparation before it is used as a food or a condiment. The acids in the nnripe fruit make it an extremely valuable addition to saltfish curry, and a thin sauce containing mango is pleasant enongh with salt-beef, timed salmon, kippered herrings, bloaters etc.

After all, moderation in the use of a good thing is the golden rule. The fate of the cows fed to excess on mango fruit with the express intention of producing pathological results, aud the experience of many that a few mangoes has a marked dinretic effect teaches the value of moderation. The best mangoes do not cloy, but whet the appetite, hence heavy meals of the ripe fruit until satiety is attained with some difficulty. The most simple rules are as follows:—Eat only ripe mangoes, and those only after a meal, aud do not eat any after evening; it is a positive disadvantage to have a juicy bulk of fermentable stuff in a stomach when one goes to bed.

It is worth noting that in certain varieties (and the cheaper kinds especially) a cluster of glands round the insertion of the fruit-stalk secrete a terebinthine resin which can permeate the pulp and ruin much of the flavour of the fruit if the stalk end be the uppermost when the mango is lying in store or cupboard for a few days; hence, another rule, always lay by mango fruits with the stalk end undermost.—Yours truly, MEDICO.

* Indigenous Drugs of India.

EFFECTS OF FEEDING CATTLE ON MANGO LEAVES.

SIR,—You mentioned, in your reference to Sir Grand Duff's lecture before the Society of Arts, the delcterious effects of mango leaves on cattle; but what perhaps is stranger is that animals are fed on this peculiar diet with a specific object, being made use of as so many machines. The following facts gathered from the Kew Bulletin No. 39 should prove of interest to some of your readers. Indian fellow or purree is described in ordinary books of reference as a colouring matter highly esteemed by artists, but its origin was little known till comparatively lately.

In 1883 the Kew authorities made enquires as to its preparation at the request of Sir Joseph Hooker, with the result that a report on the subject was forwarded by the Indian Government. Piuri (as it is also spelled) is sometimes got from mineral sources, but it is inferior stuff. The real article is prepared chiefly in Monghyr from the urine of cows kept on a diet of mango leaves and water, which increases the bile pigments and imparts to the urine a brilliant yellow colour. Cows thus fed are believed to die within two years, though the cattle-keepers will not admit this is so, and will show cows from which they say that the dye has been got for four years.

The cows, it is admitted, have a very unhealthy appearance, and to prevent the animals breaking down altogether an allowance of ordinary fodder has at times to be resorted to, though it reduces the amount of piuri obtainable. Owing to the injurious effects on the cows, the manufacture is confined to a small number of people who are looked down on by their fellows. The cows are made to pass urine three or four times a day by a process of massage of the urinary organs, and indeed the animals after a time cannot urinate unless this is done. The urine is collected in earthen pots which in the evening are placed over the fire. The heat causes the yellow dye to precipitate. It is then strained, the sediment made into a ball and dried. The merchants who export the stuff give the manufacturer on the spot R1 per lb. (mineral piuri only fetches 4d per lb.). The cost of mango leaves also no doubt restricts the manufacture, the produce of a moderate-sized tree, say 30 feet high, fetching R2. An average cow produces about 3 qts. of urine per diem which yields about 2 oz. of piuri. D.

MR. HARCOURT SKRINE ON "EXCHANGE."

Osborne, Hatton, 5th March 1898.

SIR,—I send you copy of a letter I addressed by last mail to a London Newspaper on the subject of Exchange.

It represents the views of an individual Ceylon Proprietor, who, having been through the Coffee ruin, prefers to anticipate the sowing of a like calamity for Tea.

I have purposely omitted any reference to a gold coinage because, if this is to be accorded India, it can only be by an act of grace on the part of the Home Government and we should not ask ourselves for what we may not be prepared to pay.

What we have a right to insist on as capitalists working in this country is an honest and sufficient currency whether in gold or silver. Those who sympathise with these views should remember that the situation is only intensified by delay and that the Spring in London is the time for action.—Yours truly, HARCOURT SKRINE.

(To the Editor of the *Economist*.)

SIR,—In December, 1893, I with several others pointed out to the Press in Ceylon and to my then agents in London the Premium that was being put on China Tea by the closing of the Indian mints.

The reply, in Ceylon, was that our influence as Producers would not be weighted in the balance with the necessities of the Indian Government, and in London—I was told that "China was a dead dog, that he were doing very well as it was and that it would be time enough to make a fuss when the shoe really began to pinch." For four years the experiment of drying up the currency has been going on and we have been content to abide our souls in patience, waiting the proofs of our convictions—convictions which have been ever disputed as the Exchange ebbed and flowed. The experiment is now complete and the one-and-four-penny rupee is left high and dry for all to inspect. Let us take stock of it as "selfish" producers first of all, and then as capitalists to whom the adjective selfish is inapplicable.

We will begin by admitting that the theory of China Tea being a dead dog as so far held good. No medicine can cure a man afflicted with a mortal disease. But does this affect the power of the Bounty in raising other and new competition? The Chinese on the strength of it are starting a new machine-manufactured Tea Industry; the Japanese are pressing on with their cultivation; and there lies in the Far East, only just developing, Ceylon's future great rival "Formosa." We have seen how the West Indies have been ruined by the Sugar bounties.

This was the doing of foreign Goverments and perhaps could not be met by free-trade England, but here we have our own Government putting a premium of 40 per cent. on the opening up of Japan and Formosa. Is Ceylon to go the way of Barbadoes? is a question that may well be asked long before the next general election.

Now as regards the capitalist, who not being a producer, seeks to invest in India or Ceylon. How does the currency appear to him? He sees the Indian Government so hard up for its own rupees that it has passed a bill authorising the issue of notes by the currency department against deposits of gold in London. He sees the banks in the East charging from 12 to 15 per cent on overdrafts; the Rupee Tea Company shares fallen 40 per cent in a few months, though the price of Tea has only fallen 5 per cent; all pecuniary enterprise paralysed; and the lately prosperous Ceylon reduced to the condition of a fraudulent South American Republic.

The capitalist classes are thus thrown back, out of civilisation, into the middle ages to compete—without a Currency machine their own—with the modern barbarian provided with a Currency and a Bounty put upon his products by an English Government. The experiment has proved that the first duty of a Government is to provide an honest Currency, and to supply its revenue in ways apart from this. The Government of India could always have done this; for the fall in silver was no injury to the country and what the Government lost in Revenue the Tax-payer gained. It should therefore have re-adjusted its taxation and not tempered with its Currency. The only course to avert the financial ruin of India and Ceylon is for the Government to re-trace its steps, appoint statisticians to assertain the supplies of silver needed to re-habilitate the Currency and purchase these by advertised instalments. Who would this injure? The Manchester shipper has had his unfair innings already and can well afford to discount the prospective falls in Exchange or send his goods to African markets.—Yours,

HARCOURT SKRINE.

THE CURRENCY PROBLEM FOR "LITTLE CEYLON."

Colombo, 5th March, 1898.

Dear Sir,—I have read with interest the articles and correspondence in your columns dealing with the Currency Problem. But it seems to me that we are all at present groping in the dark, owing to the want of a sufficiently wide and complete basis to argue upon. So far we have had expressions of opinion based upon the real or fancied interests of the particular writer. What we want is a well-reasoned argument, dealing with the varied interests of Ceylon, shewing how far they are antagonistic to or coincident with each other, and explaining what is our true policy in currency matters when these different interests have been adequately ascertained and balanced against each other.

I suggest that such an argument must take into consideration *six* different classes :—

1. Those who produce goods in Ceylon, the cost of production of which is mainly a silver cost, with the intention of selling them for gold.

2. Those who purchase or manufacture goods on a gold cost of production, with the intention of selling them for silver.

3. The Government considered as a corporation (in other words *the nation in its capacity as Taxpayer*, for it is of course the Taxpayers who have to pay for the Government.)

4. Those whose wages or salaries are a fixed number of rupees.

5. Those who produce or trade in goods locally produced and also locally sold, so that silver is their cost of production and also the price for which they are sold.

6. The whole body of *consumers*.

Everybody in Ceylon is comprised in one or other of these classes.

The argument would consider the effect on each of these classes. (*a*) separately (*b*) as they act, and react on each other, of the courses logically open to us, which are

1.—To have rupee standard based on the bullion value of silver. This would imply, of course the reopening of the Indian Mints or else a separate Ceylon coinage

2.—To keep the present artificial rupee

3.—To establish a gold standard either (*a*) with or (*b*) without an actual gold currency.

4.—By agreement with other nations to try to maintain a double standard of gold and silver. This is of course Bimetallism.

The argument would conclude by explaining a practical scheme for carrying into effect which ever of these four courses appeared to be most desirable. It is obvious that such an argument must be based on facts and statistics, extremely complicated and, as far as I know, very imperfectly ascertained at present. But to adopt any policy or currency scheme, without such exhaustive investigation, is simply to take a leap in the dark. My practical conclusion is that the press should combine to urge most strongly that a Commission of Inquiry should be appointed to ascertain the data, on which alone a sound policy can be adopted. Unfortunately it is doubtful whether there are trained inquirers in Ceylon competent to conduct such an investigation. For it is necessary to *analyse* the facts as well as merely record them. For instance it is not sufficient to state that the profits of a particular tea estate have fallen recently. It is necessary to go further and ascertain to what cause or causes this fall in profits is due—there are several possible causes, such as deterioration of quality of the tea etc.—and disentangle the effects due to currency from the effects due to all other causes. I am afraid no one in Ceylon has either the leisure or the necessary qualifications for such a task. But England has many such men, and it is certainly worth while Ceylon's while to procure one of them for this necessary investigation.—Yours faithfully,

CURRENCY REFORM.

COST OF PURE GOOD MILK.

Dear Sir,—In his report on Colombo dairies, the Mayor says that "pure and good milk cannot be supplied at a profit for a less sum than 25 cents per bottle." This is just about correct, for though it may be said that the Government Dairy makes a profit over milk sold at 18 or 20 cents, it must be remembered that no rent is reckoned and no salary of Superintendent or Veterinary Surgeon taken into account. With small "Coast," cattle giving on an average 4 or 5 bottles of milk, or Sinhalese cows with a milk yield seldom exceeding two bottles, 25 cents will not leave a very large margin of profit if only pure milk is to be supplied. The Lunatic Asylum is now paying 22 cents per bottle for milk from cows kept on the premises, —so as to ensure the purity of the milk,—but here again the milkman gets the premises free.

ONE WHO KNOWS.

TEA CULTIVATION AND ECONOMY.

Ambegamuwa, March 11.

Dear Sir,—Any planter in Ceylon will tell you that no new conditions and not all the pressure of Companies which may be brought to bear can ever effect any saving on the working of tea estates. Expenditure has been worked out for years back to its lowest possible limits and in some instances so fine that the Superintendent had to carry forward a debit to the following year and try to keep to the allowed expenditure in that way. No sir ! that is not the way to get out of our difficutly. It is simply a monstrous impossibilty. All that can be done is to sack Superintendents wholesale and let your estates up in weeds, sort of semi-cultivation ; these are the only two items on which they may try any improved method of curtailing expenditure and stop all extensions ; but otherwise there is nothing that can be done which has not already been done. Our only salvation lies in our having a rupee of our own and allowing India to wallow in her own mire. Why should we sink when there is no necessity for it. If only our legislators and financial men put their heads together they can soon work out a currency for ourselves and fix it in such a way relative to our trade with India, as will not harass it and thus save the colony from this impending ruin. C. T.

MR. MASEFIELD'S FINE CATCH AT NUWARA ELIYA.

Nuwara Eliya, Mar. 13.

Sir,—It will doubtless interest many of your readers to hear that I caught with a fly on the 10th two trout—one weighing 3 lb. 3 ozs. and the other 9 lb. 10 ozs. They both were taken in the stream flowing into the Nuwara Eliya lake. The largest trout hitherto taken in Ceylon, I believe

was one caught by Mr. J. M. Purdon in 1896 weighing 8 lb. 4 ozs. The length of my trout was 2 ft. 1¼ in. and girth 1 ft. 5½ in., the length being short for its weight. It was a female fish and unfortunately full of *ova*, and had I known this in time I would have tried to preserve the fish for breeding purposes. As it is I had it photographed and sent it to Mr. Jacob, of Kandy, to be set up. I hope he will make a good job of it.

An extraordinary occurrence was, that whilst playing the fish, a fine otter appeared on the scene and behaved in the most excited manner jumping in and out of the stream and swimming round and round with its head out of the water within a few feet of me and making a peculiar hissing snorting noise which otters do when excited. Whether the otter wished to help an old friend in difficulties, or to seize the opportunity of helping itself, or thought that I had hold of another otter (and I was not quite sure myself, for sometime that I had not) it is difficult to say. It will be interesting to note to what size trout will grow to in Ceylon.—I am, &c., H. V. MASEFIELD.

[This letter will be of peculiar interest to *The Field, Land and Water* and *Fishing Gazette* to whose editors, copies of this *Observer* will be sent.—Ed. *T.A.*]

SCIENTIFIC MANURING ON CEYLON PLANTATIONS.

Colombo, 16th March, 1898.

DEAR SIR,—I have pleasure in handing you my circular and would direct your special attention to the testimonial of Mr. A. C. Bonner, of Kirkoswald estate as to the value of these fertilizers.

The old custom of simply applying castor-cake and raw bones may have answered very well in the past, when the margins of profit were large; but with many adverse circumstances besetting the tea industry in the present day, it becomes a necessity for producers to avail themselves of the advantages, which the progress of Agricultural Chemistry has placed within their reach, in order to bring about cheaper production and quicker returns for the money expended on manure. This end I submit, can only be accomplished by the application of a properly constituted fertilizer, based upon the average composition of the soil, the special conditions of climate and the requirements of the crop. The special fertilizers may safely be said to comply with all these conditions, and as Mr. Bonner's testimonial shews, they may be relied upon to give satisfactory results. Another point in their favour is that they are of a very concentrated nature, which means a great saving in the cost of transport and application, and adds to the profits of the crop,—Yours faithfully,

A. BAUR,
Ceylon Manure Works.

"THE CRISIS IN THE TEA INDUSTRY:"

TEN MILLIONS OF RUPEES LOSS FROM EXCHANGE AND LOWER PRICES IN 1897.

SIR,—Figures published by your evening contemporary shew depreciation in the value of local Tea Share Scrip of close upon six million rupees in 14 months, and of this sum I may notice in passing that nearly one-third is depreciation on shares in Companies managed (and ably managed too) by the firm of which the Chairman of the Chamber of Commerce is a partner. He it was who, a week or two ago, thought it the duty of the Chamber to approve "in no undecided way" the broad-gauge railway to Jaffna and to recommend the appropriation of R1,500,000 from the general revenue during the next three years. The proposal was unanimously adopted! In the earlier part of his speech the Chairman commented on the bad effect exchange and low prices had had upon Ceylon trade for 1897; but his reference to this was most offhand and casual, and it is perfectly certain that he and the other members of the Chamber were unaware of the actual loss inflicted on hapless tea shareholders and proprietors, as a body, during the previous twelve months. As is shown by the prices referred to, the actual depreciation on shares was nearly six million rupees. It is rightly said that the fall is partially attributable to the undue inflation of 1895-6; but there is no gainsaying the fact that the primary cause was the fall in the average price of tea, and the higher exchange ruling for the greater part of the year. The average price of Tea for 1897 was 5-8ths of a penny less than in 1896, and as our shipments aggregated 116,054,567 lb., the loss to the tea industry through the fall in price was £301,183 or upwards of 4½ million rupees, independent of exchange! If we go a step further and work out this, what do we find? A loss of somewhat over 5½ million rupees! Total on Tea and Exchange say Ten Million Rupees.

It is no use trying to blink the fact that with Exchange as it now is, coupled with a low average for tea, there are less prosperous times ahead of us, and it therefore behoves the Government not to fritter away any surplus revenue—that may be required to afford relief, by lower railway rates for produce,—on a fancy scheme that cannot possibly give any return, or benefit many people for years and years to come; but to at once push on the Kelani Valley Railway, the success of which is assured from the day of opening, and which will bring untold relief to a district that suffers much for want of proper means of transport, while also benefitting many thousands of natives.

Reports of meetings of Tea Companies held since the Chamber of Commerce discussed the Railway question, show that the days for economy and caution have arrived. Firms are called upon to reduce their Agency charges; directors their fees; superintendents their salaries; and it is not at all unlikely that London and Colombo Brokers will be asked to consider the advisability of reducing their commission sales from 1 per cent to half per cent, which would mean a saving to the planter in one year of about R250,000.

Things are bad enough as they are; but if the island is to be saddled with the expense of Railways that won't pay for generations to come and the general revenue surplus be taken away for that purpose—the time is sure to arrive (and possibly in Governor Ridgeway's day) when we shall have to follow the example of the West Indian Colonists by appealing to the Imperial Parliament for relief.—I am sir, yours truly, A MAN OF BUSINESS.

THE SILVER CURRENCY QUESTION.

Kandy, March 11th, 1898.

Sir,—The Secretary, Planters' Association of Ceylon enclose copies of correspondence with the United Planters' Association of Southern India, on the Silver Currency Question.

A. PHILIP.

To A. Ronaldson, Esqr, Secretary, United Planters' Association of Southern India, Madras.

Kandy, Feb. 23rd, 1898.

DEAR SIR,—Your letter of the 11th instant, with enclosnre on the subject of the recent financial policy of the Indian Government in endeavouring to create an artificial rate of exchange, and inviting co-operation and support in representing the Producer's interests to the authorities, I know write to say that your communications were considered at the Annual General Meeting of the Planters' Association held on the 17th instant, and I confirm my telegraphio advice to you thereafter as follows:—"Letter regarding Currency Question duly received, resolution passed at Annual General Meeting resolving to co-operate in representing Producer's interests to authorities." For your further guidance, I now annex copy of the resolution above referred to, and would add that a further communication will be addressed to you later.—Yours faithfully,

(Signed), A. PHILIP, Secretary to the Planters' Association of Ceylou.

RESOLUTION REFERRED TO.

"That the Association recognising the extreme gravity of the existing conditions of exchange resolves:—1. To join the United Planters' Association of Southern India in representing to the authorities how disastrous to the interests of the Producer, European and Native, the artificial high rate of exchange has been. 2. To impress upon the Ceylon Association in London how essential it is that they should at once take steps to see that the Producer's interests are not thoughtlessly sacrificed in such a vital matter."

(Copy.)

United Planters' Association of Southern India.

Madras, 25th February, 1898.

The Secretary, Ceylon Planters' Association, Ceylon.

Dear Sir,—I duly received your telegram of 22nd instant reading "Lettter regarding tcurrency question duly received resolution passed a annual general meeting resolving to co-operate in representing producer's interests to authorities," for which I am much obliged.—I am, dear sir, yours faithfully,

(Signed) A. RONALDSON, Acting Secretary.

The Secretary, Planters' Association of Ceylon, Kandy.

Dear Sir,—I thank you for your letter of the 23rd instant, and I am pleased to learn the terms of the resolution passed by your Association at its annual general meeting, in support of the action which we propose should be taken to bring about a change in the Indian Government's present currency policy.

I enclose, copy of a letter addressed by my hairman to the Government of India, giving expression to our views, and probably the views of all producers and exporters on the subject of the present artificial value of the rupee. This letter was necessitated by a communication addressed to that Government by the Madras Chamber of Commerce in favour of the Lindsay Scheme and it was felt that if we did not now raise a protest we might not have an opportunity to do so later.—I am, dear sir, yours faithfully,

(Signed) A. RONALDSON, Acting Secretary.

(Copy of Enclosure.)

From George Romily, Chairman, U. P. A. S. I.,

To the Secretary to Government of India.

Financial Department, Calcutta.

Sir,—As we observe that the Madras Chamber of commerce has recently laid its views on the currency problem before the Government of India, and as we note with alarm that it advocates the adoption of what is known as the Lindsay Scheme for establishing a gold standard and thereby fixing the rupee at about 1s 4d, I now have the honor to submit for the consideration of Government the views of this Association on the subject, representing, as I believe they do, not only the interests of the educated European and native p'auters whom I have the honor to represent, but also the interests of the voiceless millions of native cultivators who are as yet unaware of the heavy burden under which they are laid.

2. We agree with the Chamber of Commerce "that if India is to be saved from ruin, if she is to prosper, cheap capital is absolutely necessary to develop her great resources"; but we go further than this, and maintain that not only cheap capital is necessary, but also a rupee at its natural value in order that the export trade, which is the backbone of the prosperity of India, may not be handicapped.

3. Our two chief industries are the growing of tea and coffee. Our teas have to compete with Japan and China. Japan has recently adopted a gold currency, but has fixed her exchange (doubtless having that and other competition in view), at the present low rate ruling in silver standard countries, and is for all practical purposes one of them. China has a silver standard, and a practical illustration of her favoured competition with India was recently afforded by the starting of the Foochow Tea Improvement Company, which in its prospectus lays stress on "the advantage China now has over India and Ceylon in cheap silver, the exchange value of the rupee exceeding that of silver fully 25 per cent." But taking the present intrinsic value of the rupee at between 9d and 10d and the exchange value at 1s 4d the actual advantage in favor of China amounts to 60 per cent.

In like manner our coffees have to compete with those of Brazil and Central American States. Brazil has nominally a gold standard, but owing to bad financing the Milreis, its standard coin, has fallen in value during the past ten years from 27d to between 8d and 9d so that for all practical purposes Brazil is a country with a currency on a level with that of all silver standard countries. Costa Rica and the other coffee exporting countries of Central America have a silver standard, and consequently with Brazil, enjoy the same advantages in their competition with Indian coffee, as China and Japan have in the tea trade.

4. The Madras Chamber of Commerce admits "that Indian Producers will be heavily handicapped in competing with silver-using countries by a fixed 1s 4d rupee; but to attempt to fix a lower standard does not seem to be within the limits of practical politics." It is this prejudication which we would oppose. In our opinion, the true solution of the present difficulty lies in the reopening of the mints. We believe that if this were done a great stimulus would be given to the export trade of the country and capital would be again attracted. The only obstacle, which unfortunately has been allowed to overshadow the whole question, is the loss that would be entailed on the Government of India by its home charges. This, we believe, would be largely compensated by the increased trade and prosperity of the country, but if fresh taxation became necessary to meet the requirements of Government, we, as producers, would prefer to submit to a small direct export tax on our produce than to have to struggle against the recent crushing handicap in favour of produce from silver using countries.—I have the honor to be, sir, your obedient servant,

(Signed) GEORGE ROMILY, chairman, U.P.A.S.I.

Kandy, 14th March, 1898.

A. Ronaldson, Esq., Secretary, United Planters' Association of Southern India, Madras.

DEAR SIR,—In acknowledging receipt of your letters of the 25th and 28th February, and in continuing the correspondence on behalf of the Planters' Association of Ceylon, I have, as regards the first paragraph of your letter of the 31st January 1898, only to confirm my previous communications and to assure the United Planters' Association of Southern India that it can rely on hearty co-operation in whatever combination may be deemed advisable for the purpose of representing to the Imperial Gov-

ernment, the critical condition of the producer's interests in Ceylon and in India, as well as the urgent necessity for action without delay. As Mr. T. N. Christie well remarked in 1893 :—"The interests of every class in the colony are wrapped up in its producing interests."

Before dealing with the second paragraph of your letter of the 31st January 1898, it may be convenient and useful if I briefly state what has been done by the Planters' Association of Ceylon, on the subject hitherto. In August 1893, the following resolution passed at a general meeting of the Planters' Association was forwarded to Government :—

Resolution referred to.—"That the Government be urgently requested to take immediate steps to appoint a Commission to consider and report upon (1) the probable effect in Ceylon of the recent action of the Indian Government in putting an artificial value on the rupee; (2) the measures which it may be expedient to take to protect the interests of the colony under the altered nature of the currency, as, in the opinion of the Association, the prosperity of the colony has been seriously endangered."

In reply Government stated that a Commission would be appointed to enquire and report as to the probable effect in Ceylon of the recent action of the Indian Government in restricting the coinage of rupees and the measures which it may be expedient to take to proteot the interests of the Colony, in consequence of the altered nature of the currency while Government guarded itself from being understood to express any assent to the opinions expressed in the last paragraph of the resolution quoted above. In this connection attention is also invited to the Marquess of Ripon's despatch, on the subject dated, Downing Street, July 7th 1893, and to the action of the Ceylon Assooiation in London—Sir Arthur Gordon (now Lord Stanmore) addressing a general meeting of the Association said, "The most important subject that has engaged our attention, as it must have engaged the attention of all engaged in Eastern affairs is the great silver question. We now know that Lord Herschell's Committee has made its report, and that the report has been sent out to India for consideration of the authorities of that Country." It is satisfactory to record that several gentlemen representative of Ceylon's producing interests, gave evidence before Lord Herschell's Committee.

The Ceylon Silver currency Commission reported to Government in February 1894, and since then many of the conclusions arrived at by the Commission have been verified and few, if any have been disproved. The Association therefore considers that the Silver Currency Commission's Report 1894 should form an important document on which a case can be prepared to prove the detriment to the producing interests of Ceylon and India caused by the actoin of the Indian Government in putting an artificial value on the rupee. The Planters' Association proposes to approach the Secretary of State for the Colonies by Memorial, also to secure that a deputation from the Ceylon Association in London shall wait upon him thereon, and will further urge the Governor of Ceylon to write a despatch to the Secretary of State on the subject. As Ceylon has, of course, no *locus standi* with the Secretary of State for India except through the Colonial Office, the Planters' Association may not accordingly be able actually to combine with you, nor perhaps to advocate the precise measures which you suggest, but its action will be contemporaneous, and will have practically the same object in view.

Adverting to the second paragraph of your letter under reply the Planters' Association is in full agreement with the conclusions expressed in paragraphs 14-20 and 24-28 of the Ceylon Silver Currency Commission Report hereto appended for reference, and need only point to the diminished dividends declared by local Tea Companies in 1897-1898 notwithstanding increased crops. That this diminished profit in the tea industry caused, in a large degree, by high exchange has very seriously checked further extensions of tea cultivation admits of no doubt.

It is surely almost unnecessary at this date even to indicate that competition with silver-using countries where the currency is a bullion value, currency will soon be impossible by virtue of the enormous difference between the bullion value and the artificial value of the rupee amounting at the moment to about 60 per cent, and it is incredible that the Indian Government is not well aware of that. It is an unfortunate fact in the case, that the millions of India, who are the chief sufferers, are quite incapable of understanding the cause of their reduced profits and trade, and even if they did have no means of immediately making their voices heard; while the few who are gainers by the high rate of exchange are not only intelligent and educated but are intimately connected with the Government itself, or are sufficiently strong to influence the Government. It is a significant fact that those who without question gain most by a high exchange are European Government Officers, and that those are the strongest advocates of the present policy of the Indian Government in the face of such representations as the producing interests can bring and have brought forward.

It is probably an erroneous assumption that the rupee would ever have fallen to its present bullion value (say 10d), and that if it had, the Indian Government would have been unable to meet its liabilities and it is probably correct that if the mints were reopened there would be an immedate rise in the price of silver, and therefore of the bullion value of the rupee. Again had the Indian Government by its action not so severely crippled all the producing industries of its country, the population would have been in a condition to bear some additional taxation, indirectly, perhaps by means of an export tax.

All are agreed that cheap capital is absolutely necessary to develop the resources of Ceylon as of India and that staple exchange will tend to attract capital. Capital however seeks profits not stability of exchange alone and where here are no profits capital will not flow. Moreover the high rate of exchange induces the witdrawal of capital to London and hinders its return to India for the simple reasons that *with diminished or no profits there may also be loss of capital* in getting it back again. Capital will inevitably flow where there is most profit and prosperity, but apart from this, stability of exchange is just one of those objects of the policy of the Indian Government which it has certain not attained.

One of the worst features of the case is that the Indian Government by its action has rendered remedial steps exceedingly difficult. Having paralysed the producing industries, an export tax must temporarily be severely felt. Having closed the mints and raised the price of the rupee as well as depressed the value of silver, it is difficult, if not impossible, to reopen the mints without inflicting enormous loss on holders of merchandise for the time being.

In conclusion the Association would draw your attention to the report of Mr. David Yule's speech at the meeting of the Calcutta Bank, January 26th, which commends itself as an able exposition of the case from the producer's point of view.

Mr. Yule among other matters, emphasis the want of confidence that prevails, and how essential it is to establish oonfidence. When confidence is established the Planters' Association agrees in believing that capital would again flow freely to Ceylon and India, that probably the only sensible remedy to the present unfortunate position of India and Ceylon is to gradually to re-open the mints to the coinage of silver under certain conditions. In view of the different conditions prevailing in Ceylon, and that this Colony should not be involved in the same financial disaster as the Indian Government were the rupee to fall to its intrinsic value the Association would not be prepared to join in a request for the imposition of an export duty on produce.—I am, dear sir, yours faithfully,

A. Philip,

Secretary to the Planters' Assooiation of Ceylon.

TEA FACTORIES AND SITES.

SIR,—Will any of your experienced correspondents favour me with replies to the following questions :—

1. What amounts have been spent on excavating sites for tea factories ?

2. Would the bottom of a *valley* prove an unfavourable site for a tea factory as respects the withering of the leaf ?

3. Would it be wiser to incur extra expenditure on securing a site upon an open hill side rather than choose a site down in a valley ?—Yours faithfully,

AN INDIAN PLANTER.

[The first consideration, in regard to a factory site, is what power can be utilized—if "water-power" from a river and this can best be done by occupying a position near its banks, everything else gives way to this all-important consideration. We know of a first-class factory, turning out good teas, which has its factory at the bottom of a valley for the sake of the turbine driven from the river and which gets good 'withers' and makes good tea. But then the circumstances of Indian tea districts, in respect of climate and sunshine, may differ much from Ceylon.—ED. *T.A.*]

CEYLON TEA INDUSTRY.

(By an ex-Ceylon Colonist.)

LONDON, March 4.

What is coming over our

TEA INDUSTRY?

Only 18 months ago tea was being boomed in the city ; and today men are shaking their heads, prophesying all manner of evil things and "refusing to be comforted." Shares are practically unsaleable and the average price of tea goes steadily down. The reports of our different Companies are not pleasant reading. They all account for reduced profits by referring to the rice famine and the high exchange. No doubt, these are important factors ; but I think they only partially explain the unfortunate position. The average price of tea is going down and those who are in the trade complain bitterly of the poor stuff that is now being shipped to Mincing Lane. The fact is that Ceylan is losing its good name and I think there can be no question that quality has been sacrificed for quantity. The temptation to show big yields and so assist the flotation of Companies at fancy prices has been too great, and now that these Companies are floated they must keep up the big yield to support the prospectus. What chance has quality in the competition ? But to my mind the most serious factor in the whole situation is the statement now being made vary freely in the city that tea has been "cornered," and that the produce is now in the hands of a few men who can practically control in the market. I believe I am right in saying that Lipton, Mazzawatte Co., Brooke, Bond & Co., and the Wholesale Co-operative Co. are practically today able to regulate the price of tea. The unfortunate thing about this combination, from Ceylon's point of view, is that it exists not to *keep up* but to *depress* the price of the article dealt in. When these Companies are buyers something like fair price may be realised, but if they agree at any sale to withdraw, the market collapses. The tea sale this week is the worst on record and men, usually sanguine, confess that the outlook is depressing. I do not wish to exaggerate the importance of Lipton, but my opinion is that he is primarily the cause of the present disturbed state of the tea market. The "largest dealer in the Kingdom" had to break all known prices ; others in the trade entered into competition to save themselves and the demand was for cheap tea. One of the Companies mentioned above is now selling packet tea at 10d per lb. to complete with Lipton's at 1s per lb. Sorry I cannot write more but the mail is just closing.

[The above may explain the Calcutta telegram contradicting any "corner." Should such arise, planters will have to form Syndicates to get directly at consumers.—ED. *T.A.*]

PLANTING NOTES.

TEA PLANTING IN BOGAWANTALAWA-BALANGODA DIVISION.—A recent visitor passing from Dikoya to Balangoda remarks on the evidence of progress at the junction of the two districts :—"I have found a great change in this part of the country since last here. Before, Detenagalla was the first tea you saw after the gap ; now the whole head of the valley, which used to be 'chena,' is planted up, and as the soil and the 'jhat' are both good, it seems likely to be a good investment."

INDIAN TEA.—The total shipments to all places, from 1st April 1897 to 31st January 1898, amounted to 141,678,418 lb., of which Great Britain alone took 130,419,051 lb., leaving less than 8 million pounds for consumption in India, which is a curious commentary on the exigencies of trade. The country producing the tea, with a population of 300 million souls, is unable to consume more than 8 million pounds of its own product. Not that the Aryan does not appreciate the value of tea, indeed he is fully alive to its merits, but it will require great efforts to penetrate his conservatism. The question of price is an important factor with him, and until he can get his *chah* by the pice, it is doubtful whether he will become an extensive consumer.—*I.P. Gazette.*

IN CENTRAL AFRICA.—A former coffee planter in Mysore writes to a friend in Ceylon describing his experience. A contemporary gives the letter, and from it we take the following extract :—"Since leaving six months ago I have not met half dozen Europeans and the Government Collectors. I have been in places and whole districts where no white man has ever been, and only on one or two occasions I have been badly received. Generally the Chief has turned out and given me his house. Where I have been badly received I have left an everlasting impression on the villagers. I have been buying ivory in exchange for calico, but have not made much out of that, but now I have taken up 2,500 acres of some of the best land in the world for coffee planting and have stated work in earnest. As a byplay I have over 700 men gathering Indiarubber, who bring me in over half a ton a week, and I hope to double that amount of men in a couple of months. I started with the idea of settling at least not within 100 miles of another planter and so I have, for my nearest neighbours are 600 miles away and yet my transport is just as easy as theirs. I am about ten miles from the lake shore and can send down goods by the lake into the Shire river and thence down the Zambezi to the sea English coinage is of no value here."

AGRICULTURAL SHOWS IN CEYLON.

The following leaf from the past will be read with interest just at this juncture when Agricultural Shows are in the air :—

List of Prizes awarded by the Agricultural Society (of Ceylon) on March 31st, 1845 :—

No.	Description of Articles.	Amount. £	Names.
1	Best 4 year old coast bull..	10	Mr. Tytler
2	2nd best do ..	4	do
3	Best cow ..	5	Mr. J. W. Little
4	Best yearling bull ..	2	Jayatilleke Mud.
5	Best 3 year old bull (mixed breed) ..	10	Mr. Tytler
6	2nd do 3½ year old ..	4	Mr. W. Austin
7	Best heifer (mixed breed)..	3	Mr. Gerard
8	Best native breed cow ..	2	do
9	Best fatted bullock (any kind) ..	3	Mr. Tytler
10	2nd best do ..	2	do
11	A coast bull ..	2	Capt. Jolly
12	Best imported English cow	5	Mr. Lindsay
13	Best mule ..	5	Mr. Young
14	Best 3 year old jungle pony	3	Tikiri Banda
15	Best sow ..	1	Mr. Hamilton
16	Best bouquet of flowers ..	1	Mrs. Delegal
17	Fine sample of Peruvian cotton ..	5	Mr. Robbe
18	do silk from Dumbara..	10	Dr. Hewlett
19	Sample of 500 bush Indian corn ..	2	Mr. D. A. Watt
20	Two pumpkins ..	¼*	Tikiri Banda
21	A very large bunch of plantains ..	¼	Mr. H. Steuart
22	Best cabbage and pease ..	¼	Mr. C. Buller
23	A pair of fine rabbits ..	¼	Mr. E. R. Power
24	A pair of black fowls ..	¼	Mr. Tytler
25	For Mr. Guthrie's improvement on the pulper ..	20	—
26	Specimens of tiles and bricks ..	1	—
	Total	£101¾	

* 5s.

A NEW WAY WITH DIRECTORS.

In these days we are told that it is rather difficult to catch hold of a Director of a local Tea Company. So many of the Companies have done badly, that, perhaps, it is not to be wondered at, that, rather than face the heated inquiries of disappointed shareholders, Directors should be content to "hide their diminished heads" and be as difficult to find as a profit to divide, or a prophet who can foresee, to any real purpose! Still it is in these times that really good men are expected to hold on to the helm, and the good man has always his worth. Directors' fees which, in prosperous days, float in so agreeably and at so slight a cost, are now approximating to Dead Sea apples; and the more sensitive a man is, the less does he like taking fees from a hungry and starved body of shareholders, who can "bill and coo" in the golden harvest days, but get nasty in "the winter of their discontent."

The London *Spectator* commenting on the "Grosvenor Hotel Case" suggests that "the Directors' reward can be made to depend upon what they are able to earn for the shareholders. The fee should be abolished, and a commission dependent on and proportionate to profits actually earned be substituted in its place." A capital idea if it could be carried out; but we fear that if today a Director of a local Tea Company is difficult to catch, he could not be found at all if the terms suggested by the *Spectator* were to obtain amongst us! Yet a fee proportionate to profits would give less offence than a fixed sum for all time, and, besides it should stimulate to good directorial work; and moreover would it not lead to a greatly diminished risk of unprofitable, non-paying Companies being started if the Directors—namely the promoters—had no prospects save through a commission on profits? Here are the *Spectator's* remarks at fuller length :—

We all know how under existing conditions the work of a Director, which is really of the most onerous and responsible kind, has come to be regarded as a kind of honorary or titular distinction whereby a man, often through doubtful intrigues, makes an income without doing any work. At the meetings of the Directors he signs the book and takes his fee, and that is about all he does. To "direct"—*i.e.*, to act for the Company as the individual business man of an earlier stage acted for himself—to check accounts, to examine prices, to determine on orders and sales, to prevent leakage, all this is beyond his intention, perhaps beyond his capacity. We fully admit that no legislation, however stringent, can ultimately protect shareholders from dishonesty or incapacity on the part of Directors. But at least this can be done,—Directors' reward can be made to depend upon what he is able to earn for the shareholders. The fee should be abolished, and a commission dependent on and proportionate to profits actually earned, be substituted in its place. The great object, it cannot be too often repeated, is to compel the Director to direct, to make of him a real business-agent instead of a mere figure-head, an ornament, or, as in the case of the Grosvenor Hotel Company, a mere tool of a profit-seeking man. The Grosvenor Directors knew that their attendance fees were secure, and they cared for nothing else; the interests of the big-hotel and of those who owned it were indifferent matters to these men of straw. The Directors must be interested in the enterprise, and their reward must be dependent on their exertions in behalf of their clients, the shareholders; that at least is certain if we are to relieve the Company system from the odium and the suspicion which, after this extraordinary case, must be held to attach to it. For the responsible managers of a commercial undertaking to pocket their rewards and shut their eyes to overcharges is intolerable. It is the idle and irresponsible Director who is at present the weakest spot in the modern business system.

THE GOVERNOR'S TRIP IN THE EASTERN PROVINCE:

PROGRESS OF AGRICULTURE: FRESH COCONUT LAND.

(Communicated.)

The Governor's visit to the Eastern Province passed off very satisfactorily, and he took great pains to make himself thoroughly acquainted with its capabilities and wants. He was much impressed with the magnitude that the paddy and coconut cultivation had attained and the industrial character of the agricultural classes. Three or four important measures that were laid before His Excellency for the further development of the Province will receive his immediate attention.

As regards Coconut cultivation there will soon be advertised for sale some excellent land near the sea-coast towards the south. Capitalists will do well to invest as they will have the opportunity of buying large blocks all together if they wish it. Coconut cultivation is the thing of the future.

"RAMIE: ITS CULTIVATION, DECORTICATION, TREATMENT AND USES,"

Is the title of a pamphlet just issued by Messrs. MacDonald Boyle & Co., of which a copy has been sent to us from home, and from which we quote some practical paragraphs as follows :—

In an Estate of, say 1,200 acres, we advocate the laying out of 3-acre blocks—two acres of which under cultivation, and the remaining acre, is devoted to paths

—one coolie can attend to each block, as when once started he has only to cut a daily supply of stems; no cultivation being necessary, beyond returning to the land, the refuse consisting of the leaves (which are stripped off on the spot as each stem is cut) and the ashes from the burnt refuse from the Decorticators; the daily cuttings, assuming a crop of 70 tons of stems, per annum, per acre, would be about nine hundred-weights for each two acres. Assuming the stems to mature in three months the block would be planted in twelve sections occupying twelve weeks, and by the time the last section is planted, the first should be ready for cutting. Each section, will require weeding, until the stems have arrived at about 2 feet high, after that, no weeding will be necessary, as no weeds can grow in the neighbourhood of Ramie, after the plant has arrived at that height.

If regularly cut, the plants will continue to grow for an indefinite period, but in consequence of the spread of the roots they will require periodical thinning out—removing every other one for instance—care being taken to have other land ready to transplant the roots so as to prevent waste. Irrespective of other considerations, the system of daily cuttings is important, inasmuch as only ripe stems are cut, and a uniform quality of fibre assured, whereas by the crop system, ripe, over-ripe, and immature stalks are cut indiscriminately, thus preventing any possibility of uniformity in the fibre.

In order to select suitable land for the cultivation of Ramie it is necessary to understand the chemical constituents of the plant, these having been found by careful analysis of the incinerated green plants to be as follows:—

Potash	11·8
Soda	2·35
Lime	30·87
Magnesia	7·89
Ferric Oxide and Alumina ..	2·41
Oxide of Magnesia	0·17
Phosphoric Acid	7·29
Silica	33·01
Chlorine	2·43
	100·5
Less excess of Oxygen due to Chlorine	0·5
	100.0

From the above analysis it would appear that the Ramie plant exhausts the soil, but inasmuch as the whole of the refuse from the decorticators (consisting of bark and wood, and the whole of the leaves) is returned to the soil, there remains simply the fibre which is only $2\frac{1}{2}$ per cent. of the weight of the stems without leaves—under these conditions the exhaustion is more apparent than real.

From experiments undertaken by the United States Agricultural Bureau, the Mineral ingredients extracted from the soil were found to be distributed over the whole plant as follows:—Of Potash about three-fifths in the stalk, more than one-fourth in the leaves, while the *bark and fibre contain a little above one-tenth*. Of the Lime 87 per cent. was in the leaves, 10 per cent. in the stalk, and 3 per cent. in the bark. 55 per cent. of the Nitrogen was found in the leaves, 29 per cent. in the stalks, and 15 per cent. only in the bark. So that all that is actually taken from the soil is an infinitesimal amount of the Potash which is contained in the fibre.

In the choice of the land therefore it is necessary to ascertain the quantity of the above ingredients it contains. A soil not too heavy should be selected, and be well but not too deeply drained, as the plant is a surface feeder; it grows better in the shade; in clearing jungle, therefore, many of the large trees may be left standing.

METHOD OF CULTIVATION.—When sufficiently cleared the land should be laid out in blocks of three acres, to which one coolie can attend, as all he has to do after the plants are two feet high is to cut the stems as they ripen and deliver them to the tram line. For the convenience of transport the tram should run through the centre of each block, so that the farthest point to which he will have to carry the stems should not be more than 250 yards, that is, he will have one and a-half acres on each side of the line, the length of each block being roughly 250 yards; the three acres should be laid out in beds, 6 feet wide, with a pathway between of 3 feet. This will give two acres actually under cultivation. The beds should be turned over about 9 inches deep, and the earth from the paths (which should be about 18 inches below the level of the beds, to carry off the heavy rains into the drains), thrown on to them, and smoothed over. They are then ready for planting.

PLANTING.—If sufficient plants already exist in the neighbourhood, an estate may be started with cuttings, rooted layerings, or by means of the divided roots. If no plants exist recourse will have to be had to seed.

CULTIVATION FROM SEED: Sowing.—A piece of any light soil, is well dug once or twice, then divided into small beds, say six feet by four feet, the surface is pressed down with the back of a spade and made moderately firm, and then racked smooth. The evening before the seed is to be sown the beds are watered, the following morning they are likely raked and levelled. The seed, which is very small, is mixed intimately with dry earth, say one pint of seed with twelve pints of earth, which is sufficient for six beds of the size named. This mixture is sown evenly over the beds (*not covered with earth*) and then lightly pressed down with the back of a spade. Light thin mats are stretched on sticks about two feet above each bed, to keep them sufficiently moist, and to protect the germinating seeds from the sun. No water is given till the young plants are up, but if necessary, the shading mats are sprinkled by means of a broom dipped in water. The mats are removed at night, so that the young plants may catch the dew, and they are laid aside altogether when the plants are two inches high. If the beds are dry they are now watered, and this is repeated whenever necessary. The beds should be kept clear of weeds. As soon as the plants are big enough to handle, and before they become crowded, they are transplanted to the field—a wet day being chosen for the purpose; they are taken up with a spade, keeping a small ball of earth round the roots of each, and planted about nine inches apart. The beds should be kept weeded, until the plants are 2 feet high, when no further attention is necessary.

PLANTING ROOTS.—When the plantation is started by roots, they should be planted 18 inches apart.

LAYERINGS.—The plants can be propagated by means of layering either from the seedling or the root; when the plants are grown for the special purpose of propagation, they should be arranged three or four feet apart, set slantingly, two or three inches of earth covering the tops. The ground must be kept clean and loose. When the first stalks have attained the height of about three feet, they are ready for layering. The ground then should be thoroughly moistened, and the stalks bent gently down, fastened with small crotchets, and covered with three or four inches of earth, leaving the top, of the layered stalk uncovered. Care should be taken to avoid detaching the stalks from the parent root. In the course of three or four weeks the layers will have made stalks, which can again be layered for the same purpose, and quite a number of the stalks can be dug out for transplanting in order to increase the plantation.

CUTTINGS.—These are prepared by dividing the stalks into lengths of five or six inches. They are set out obliquely, about twelve inches apart, and nearly covered with earth, and if the work is done before the hot weather begins, they will require neither watering nor shading, but must be kept clean of weeds. In two weeks they will have rooted.

TRANSPLANTING.—In time the entire space between the rows will have become filled with roots unless precaution is taken to remove every alternate plant as soon as the rows become overcrowded, but care should be taken to have other land ready for receiving the transplanted roots.

EVEN GROWTH.—The matter of securing an even growth of stalk is a very important consideration; by even growth is meant not only even length and size of stalk, but uniformity of growth. A stem of

Ramie grows rapidly when there is sufficient mois'ure, but is of stunted and slow growth when opposite conditions prevail. When one of these conditions follows the other in the same growing crop the fibre is adversely affected, for in the after-process, to fit it for spinning, the chemical treatment, necessary to reduce the hard and stunted growth, to the condition of spinable fibre, may wholly disintegrate the structure of the fibre, in the softer or free grown portion of the stalk, and great waste and loss ensue. Therefore, where lengthened droughts are likely to occur, means of irrigation must be provided.

Crop.—One acre of land should produce at least 70 tons of stems (stripped from leaves) per acre. This means that each coolie will have to cut and bundle, on his two acres under cultivation, about 9 cwt. of stems (weighing say 6 ounces each) per day, and reckoning 313 working days to the year.

Decortication.—After cutting, the next operation is to decorticate the stems and separate the fibre. One battery of decorticators will treat the produce of 200 acres. This battery is placed in the centre of e ch 200 acre block, so as to minimise the transport of the stems.

Degumming.—The fibre produced by the decorticators, is embedded in a mass of gum, and resinous matter, insoluble in water, which must be removed before the white filasse suitable for textile purposes, can be obtained. It has therefore to be sent to the degumming shed, where by means of a chemical process, the cleaning is effected, and a beautiful white fibre obtained; it is then dried and packed for export.

An estimate of Plant and Machinery to treat the produce of 400 acres under cultivation, amounts to £3,050.

This plant will produce about two tons of Filasse per day. The estimate does not include the cost of erection, which will naturally vary, according to the situation of the estate, and the labour available.

Estimate of Cost of necessary Machinery for treating the product of 1,000 acres—is

PLANT AND MACHINERY.

	£.	s.	d.
Decorticators, 5 Installations of 40 Drums, with 5 12-h.p. Engins	3,000	0	0
One Degumming Plant ..	1,000	0	0
Steam Boilers and Engine ..	1,000	0	0
Soaking Tanks	250	0	0
Chemical Tanks	250	0	0
Water Tanks	100	0	0
Steam Pump and Appliances ..	100	0	0
Loading Crane, Weighing Machinery, &c.	500	0	0
Fittings for Treating Sheds ..	250	0	0
Steam Barrel, Steam Valves and Fittings	150	0	0
Belting .. say	100	0	0
Baling Machinery	500	0	0
Freight and Sundries say	350	0	0
	7,550	0	0

The above machinery will produce 7½ tons per day of cleaned filasse. This estimate does not include fitting and fixing, for the reasons stated above.

TABLE OF COST, INCLUDING FREIGHT, &c.

Assuming the product to be one-and-a-half tons per acre per annum on 1,000 acres, the following table will show at a glance, approximately, the price of each ton Filasse according to the cost of labour, the other figures remaining constant.

Wages per day.			Cutting.			Decorticating.			Degumming, including Chemicals.			Freight, including Wrapping for Bales.			Brokerage and Landing Charges.			Total Cost per Ton.		
£	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.	£.	s.	d.
	0	3	1	13	9	1	4	8	2	9	0	2	10	0	0	16	10	8	14	3
	0	6	3	2	5	1	19	3	2	12	10	2	10	0	0	16	10	11	1	4
	1	0	5	19	9	3	8	4	3	0	7	2	10	0	0	13	10	15	15	6
	1	6	8	17	1	4	17	5	3	8	6	2	10	0	0	16	10	20	9	10

The Brokerage and Landing Charges have been taken at the sale price of £42 per ton, which sum the Filasse will readily obtain in the English Market. If a higher price is secured, of course this item will be increased.

Terms.—The above Machinery is supplied on condition that 25 per cent of the net profits is paid to Messrs. Macdonald, Boyle & Co. by way of royalty, and in all cases, before the machinery is supplied, the purchasers will have to enter into a contract to that effect. One third cash is payable with the order, and the balance when the machinery is packed ready for export.

The local Agents Messrs. Lee Hedges & Co., advertise that they are ready to supply copies of the pamphlet.

INDIAN PATENTS.

APPLICATIONS FOR THE UNDER SPECIFIED INVENTIONS HAVE BEEN MADE.

12th February, 1898.

No. 45.—G. F. M. Horbury, M. Inst. C.E., Bombay, for an improved latrine for natives.

No. 47.—J. S. E. Lumsden, office of Accountant General, Military Department, for an automatic machine for pulling punkhas.

No. 48.—Khetter Mohun Kurmokar, of Alipore, and Annada Prasad Mukerji, of Kidderpore, for an improved motor for actuating punkahs and other similar purposes, to be called a "powerball."

No. 49.—J. L Spoor, Madras, for the manufacture of cement.

No. 50.—Charles James Dear, of London, for an improved machine for the breaking, scutching, decorticating and like treatment of ramie and other fibrous plants.

No. 55.—Dosabhai Khurshedji Eadan, Bombay, for an improved machine for extracting fibres.

No. 56.—John James Mursland, Bombay, for an improved latrine seat for the use of natives of India, to be called "the Aryan latrine seat."

19th February, 1898.

No. 64.—John Kiel Tulis, of Glasgow, for improvements in treating hides and skins.

No. 66.—John McDonnell, Ceylon, for improvements in apparatus for keeping tea-leaf cool during the process of rolling by machinery.

26th February, 1898.

No. 71.—William Martin, Agra, N.-W.-P., for a combined plough suitable for ryots in India.

4th March, 1898.

No. 79.—Heinrich Ludwig Verwohlt, of Java, for improvements in and relating to machines for the treatment of Liberia coffee beans.—*Indian and Eastern Engineer.*

"The Agricultural Gazette" of New South Wales. Volume IX. Part 2. For February, 1898, has the following contents:—The Making and Improvement of Wheats for Australian Conditions; The Economic Feeding of Working Horses; Bacteriology in Relation to Dairying, (with a contrast between European and Australian methods); Notes on Pests and Crops; Some Tools useful in Experiment Work; Fruits at Wollongbar Experiment Farm; The Australasian Fruit Case; Breeding and Rearing Ducks; The Causes of Bloating and Frogging in Prunes; Plans and Specifications of a small Circular Silo; Bees, and How to Manage them—II; Bee Calendar for March; Orchard Notes for March; Practical Vegetable and Flowers Notes for March; General Notes; Replies to Correspondents; List of Shows for 1898; Label for Specimens.

MACHINE-MADE TEA IN CHINA

A TRADE REVOLUTION.

SHANGHAI, March 3rd.—It is certain that very great interest will be taken in the modest prospectus of the Liang Hu Tea Improvement Company, which appears in our front page this morning. The Russians only remain faithful to China Congou, and the British public, the greatest tea-drinkers in the world, will not have China Congou any more, preferring the machine-made tea of India and Ceylon; and thus what was a magnificent trade has dwindled away to a shadow. But the leaf grown in China is still the best in the world, all the plants that produce decent tea in India and Ceylon having been introduced there from China; the trouble is in the mode of preparation. Three or four men have been working for some years to get the Chinese to adopt the modern system of manufacturing tea. The manufacture has been adopted successfully on a small scale at Foochow, and experiments made at Wenchow last year with very inferior leaf opened the eyes of the Chinese as to how by the use of machinery they may regain the market they have lost. Now the tea-men of Hankow and the high officials of the great black tea producing provinces, Hupeh and Hunan, have been interested in the matter, seeing that a recovery of the English market means wealth to themselves, as well as to the growers and the foreign merchants who handle the packed product. A Company, modest enough in its inception, has been formed at Hankow with a capital of Tls. 60,000 and Shanghai is also appealed to for its co-operation. The Chief Director is Mr. R. B. Moorhead, Commissioner of Customs at Hankow, and we understand that this appointment is particularly favoured by the Viceroy at Wuchang, under whose protection we may say the company is formed. The provisional directorate is a very strong one. Mr. Chi Ching-foo is the compradore of the Hongkong and Shanghai Bank here. Mr. Tang Kew-ching is familiar to all who have anything to do with tea as Awal, and his name is a synonym for enterprise, intelligence, and uprightness. Mr. Tang Soey-chie is the head of the leading tea hong at Hankow and compradore to Messrs. Molchanoff. Pechatnoff, & Co ; while Mr. Chun Fai-ting, the able and courteous Manager of the China Merchants' Steam Navigation Company in Shanghai, needs no introduction or commendation. A significant paragraph in the prospectus is that which says that "although this is a purely mercantile company, Mr. Moorhead has received the guarantee of the Viceroy of the Laing Hu provinces that the machinery and employes shall be fully protected", and still more significant is the statement that "no officials will be directors or in the employ of the company." The confidence that is justly reposed in the Hankow Commissioner, Mr. Moorhead, by Chinese and foreigners alike, is shown in the provision in the prospectus that the "Chief Director is to have full power in the direction of the company and in the engagement of all employes of the comany ; he is also to have power to detegate his anthority temporarily to any respectable and trustworthy foreigner, whom he believes capable of performing his duties during his temporary absence, but he is to be accountable for the acts of his delegate."

It cannot be doubted that in this small beginning we have the germ of a revolution in the preparation of tea in China, and a resurrection of the trade between Hankow and London, which is dead if not actually buried. The first tea-leaf rolling machine for the company is on board the "Oanfa" and will be landed in a few days. A commencement of operations will be made this year in Yanglaotung district. It is not our province to recommend publ c companies to our readers; but the establishment of the Liang Hu Tea Improvment Company means a great deal more than the provision of a remunerative investment; it means the recovery of a great trade that has been lost, and, it was thought irretrievably lost. There is no question that China, by adopt ing Indian methods of preparation, can compete, with India, and on still better terms if India adopts, as it is said she is going to do, the gold standard.—*N. C. Herald.*

CARE OF HORSES.

It is speed that kills, overloading that breaks down and ruins.

A rough, soft or sandy road, nearly or quite doubles the labour of a horse, and a head-wind adds greatly to it. A rise in the grade of one foot in ten doubles the draft. Dry axles double the labour and weariness of the team.

Overloading is costly and cruel, and has ruined thousands of horses. No load should be too heavy to haul easily over the hardest place on the strip. Steady hard pulling causes great pain, so a team should have frequent rests, especially during the early part of a trip.

Much horse power and distress is saved by starting slowly and driving moderately the first hour. Never start fast.

Balking is caused by overloading whipping, cold or ill-fitting collars or harness, and ugly drivers. It is cruel and useless to whip a balky horse. Turn his attention ; tie a string rather tightly around his leg or his ear, lift his foot and pound on the shoe, give him sugar or an apple, but do not hurt him. Rarey says, "horses never balk until forced into it by bad management."

Hard worked horses should have hay on the floor at night so that they may eat while lying down.

Plaster scattered on the stable floor keeps down bad odour and purifies the air.

To protect horses and cows from flies rub them with a cloth dam, *not wet*, with kerosene. It helps greatly. A decoction of walnut leaves is said to be very effective.

The feet should be examined every night and stones removed, as standing on them causes suffering and lameness.

It is cruel and impolitic to tie a horse so that he cannot lie down. Horses should have deep, soft bedding, night and day, especially hard worked ones.

Horses need water as often as men—or oftener. It is better to give them water five or six times daily than let them drink rarely and heavily.

Regularity of meals and variety of food are as important to horses as to men. Water horses before feeding them, or keep water within their reach.

The horse having a very small stomach does better on three meals a day than on two, and should not have an unlimited supply of hay. He is much like a man and needs very similar treatment.

Horses over twelve years old often suffer from toothache, which prevents mastication and causes poor condition. Every horse should be examined annually by a veterinary dentist. It *pays.*

Horses need a variety of food. It pays to give them vegetables, a few apples, &c., also fresh grass, all moderately. Every horse should have a box of salt within his reach, also a pail of water, especially at night.—*Home paper.*

MINOR PRODUCTS.

London, March 5.

COCA-LEAVES.—At the drug-auctions today fair green Truxillo leaves were limited at 6d per lb., and broken at $5\frac{1}{2}$d. A parcel of 11 bales fair Ceylon was brought in at 4d. The export from Java for the six months ending—

Year	..	1894	1895	1896	1897
Bales	..	369	619	560	598

CROTON SEED.—Two parcels consisting of 29 bags has come to hand from Colombo, but were not in time to be offered at today's auctions.

OIL CHAULMUGRA.—Good pale sold at 1s 5d per lb.

OIL, CINNAMON.—Two parcels of "cinnamon-leaf" oil were bought in at 4d per oz. The exports from Ceylon from January 1 to February 8 were 17,375 oz.

OIL, CITRONELLA, sold, with good competition, at 1s 0⅝d to 1s 0¾d per lb. It was bright yellow to green oil, put up without reserve, 159,291 lb. were shipped from Ceylon from January 1 to February 8, of which 76,949 lb. went direct to America and 77,331 lb. to the United Kingdom.

VANILLA.—In small supply. A few lots sold, fair chocolate 5 to 6½ inches, 17s to 18s medium brownish at 15s. A few lots split Mauritius 6 to 6½ inches sold at 15s mouldy Tahiti brought 3s 5d per lb.

CINCHONA.—At the sales in Amsterdam last week less than half of the bark offered was disposed of. The sales made at the respective units were as follows (in quinine-sulphate equivalents):—

5c	5¼c	5½c	5¾c	6c
522	1,426	2,354	2,445	1,094 kilos.

The following is a statement of the quantities and descriptions of bark offered:—

	Ledger.	Succi-rubra	Hybrid.	Officinalis	Calisaya
	Kilos.	Kilos.	Kilos.	Kilos.	Kilos.
Gov. Plant. ..	26,471	3,714	—	—	—
Private Plant. .	481,860	32,743	36,461	1,992	368

—*Chemist and Druggist*, March 5.

A COCONUT PALM CATERPILLAR.

[The following paper by Mr. E. Ernest Green, Honorary Government Entomologist, on the disease of Coconut Palms, is published by Government for general information.—ED. *T.A.*]

"THE BLACK-HEADED COCONUT CATERPILLAR."

DESCRIPTION OF INJURY.—The first indication of the pest is the withering of the palm leaves, only the very young leaves at the top of the tree remaining green. The disease rapidly spreads over a large area. The withered leaves droop and eventually fall off. Old trees and young plants suffer equally. Nuts and young plants in nurseries do not escape. Upon the under-surface of the injured leaves will be found an accumulation of what looks like saw-dust mingled with web. This has been formed by the caterpillars for the purpose of concealment, and they live and feed beneath this covering. All the green parts of the leaf are eaten away from below, leaving only the hard skin of the upper surface and the tough fibres. The husks of the young nuts are also sometimes attacked and the outer green skin eaten off. Gummy matter oozes out from the wounded parts of the nut and dries into hard reddish lumps. Such extensive injury to the leaves weakens the trees, resulting sometimes in a loss of more than 50 per cent. of the crop, and reducing the bearing capacity of the trees for two or three years.

HISTORY OF THE PEST.—It appears, from reference to old estate diaries, that the pest has been known in parts of the Batticaloa District for the last thirty years, sometimes breaking out with great virulence, and at other times disappearing altogether. The late Mr. H. Nevill, C.C.S., reported that the caterpillars were destroying the leaves and seriously injuring the trees over acres of coconut estates at Batticaloa in September, 1896. Mr. Nevill remarked, at the same time, that the pest was not known on the Jaffna estates. The pest appears to be at its height in the months of September and October, and to disappear with the advent of the heavy rains of the north east monsoon.

DESCRIPTION OF THE INSECT.—The caterpillar is small, scarcely more than half an inch long when fullgrown. The skin is smooth, with only a few very fine inconspicuous hairs. The head and next two divisions of the body are black and shining, the rest of the body is cream-coloured with minute brownish specks and lines. The parts immediately behind the head are considerably broader than the rest of the body.

The chrysalis (pupa) is shining reddish brown, and enclosed in an irregular cocoon amongst the old webs formed by the caterpillars.

The moth (which probably emerges in about fifteen days' time) is of a pale slaty-gray or yellowish gray colour, the front wings specked with black. The expanded wings measure ¾ inch from tip to tip. The eggs have not at present been observed. They are probably deposited in clusters upon the young leaves of the palm.

REMEDIAL MEASURES.—It is reported that the usual remedy now employed is to burn the fallen leaves and other rubbish with a sprinkling of sulphur over all. The smoke is supposed to kill the insects. Mr. Munro, one of the pioneers of coconut planting in the district, informs the Government Agent, Batticaloa, that his estate suffered severely at one time, but by dint of constant fumigating the pest has disappeared altogether, and has shown no symptoms of returning. His mode of procedure was to collect large heaps of rubbish and burn them in dry weather during the prevalence of high wind, which drove the smoke through the whole estate. The middle of the day was also selected as the best time, when the moths and caterpillars were not protected by a covering of dew or moisture of any kind. This was kept up for some days till the pest disappeared.

It is improbable that the smoke—or even the fumes of sulphur burned in the open air—would actually kill the insects. But the constant smoke may very possibly make the neighbourhood so unpleasant that the moths are driven away to other parts before laying their eggs. And consequently no fresh broods would appear on the protected estates.

The burning of the fallen leaves is to be recommended also for the reason that many of the pupæ of the insects may be destroyed by this means. Before the fall of the old leaves, however, the active caterpillars will have crawled on to fresh leaves. It would therefore be strongly advisable to *cut off the injured leaves while the insects are still feeding upon them and to burn these with the rubbish.* If carefully carried out at the commencement of an attack, this treatment would probably of itself be sufficient to keep the pest in check and to prevent it from spreading further.

Any attempt to kill the insects upon the growing leaves by means of insecticides is quite impracticable, except upon very young trees and upon plants in nurseries. Even in such cases, when the pest is once established, it would be difficult to reach the caterpillars by spraying, owing to their habit of secreting themselves and feeding beneath a dense web. But young trees and nursery plants at present unaffected by the pest, and even the nuts upon the older trees, might be protected by the use of a wash containing arsenic mixed with some soapy medium. This would make the leaves distasteful and poisonous to the caterpillars.

The burning of rubbish and weeds, with or without the addition of sulphur, in unaffected plantations might also prove of protective value. The smoke, if dense, would tend to keep away the moths that are migrating from neighbouring affected fields.

A careful watch should be kept for the first appearance of the pest, and every effort should be made to check it before it has become widespread.

E. ERNEST GREEN,
Honorary Government Entomologist

February 24th, 1898.

DEAFNESS. An essay describing a really genuine Cure for Deafness. Ringing in Ears, &c., no matter how severe or long-standing, will be sent post free.—Artificial Ear-drums and similar appliances entirely superseded. Address THOMAS KEMPE, VICTORIA CHAMBERS, 19, SOUTHAMPTON BUILDINGS, HOLBORN, LONDON.

PLANTING NOTES.

PLANTING IN THE NILGIRIS.—A recent visitor reports:—"The *Coffee* in the Nilgiris looked grand and a fine blossom was just coming out, but the *Tea* is mostly China. The shops were advertising Darjiling Teas at R2 per lb."

AMMONIA SULPHATE.—The report of the Deutsche Ammonia Verkaufs Vereinigung for 1897 shows that during that year they sold in England 2150,000 tons ot ammonia sulphate, in Germany 100,000 tons, in France 30,000 tons, in Belgium and the Netherlands 30,000 tons—altogether 375,000 tons, or 40,000 more than in 1896.—*Chemist and Druggist.*

A COCONUT PALM CATERPILLAR.—The Government has just sent to the press a very useful memorandum on a coconut pest from the Honorary Entomologist, Mr. Green, which we reproduce on page 721 with the intention of at once including it in our current manual "All About the Coconut Palm." We have not heard much of the caterpillar on the Western side of the island; but to be forewarned is to be forearmed; and Mr. Green states very clearly what ought to be done where its presence is detected.

CEYLON GEMS.—At a recent meeting of the Royal Society of New South Wales, Prof. Liversidge exhibited some mineral specimens. Amongst them was, says a home paper, a sapphire from Ceylon, which is of a fairly deep red or amethyst tint by candle or gas light, but of a blue colour by day-light, by the electric light and by magnesium light. The change in colour was exhibited to the members. These gems are being sold at Colombo as blue alexandrites (chrysoberyl). Many sapphires show this dichroism; but good specimens are not common.

RAMIE—says an expert—grows luxuriously, and with very little cultivation in both temperate and tropical climates providing that the atmosphere is fairly moist and the ground not swampy. Given a fairly warm and damp air, the rods grow quickly to a height of ten to twelve feet and are of a uniform character and easy to decorticate. But if the climate is irregular, and dry periods occur, then the vigorous growth of the stem is checked, and the bark is hardened and ripened to such an extent as makes separation of its fibres difficult. The main difficulty, however, has up to the present been experienced in the absence of a suitable machine to properly separate the fibre from the other constituent of the stem.

OSTRICH FARM IN SAN ANTONIO.—Before April opens an extensive and completely equipped ostrich farm will be well established within San Antonio city limits. Mr. Thomas A. Cockburn of California, formerly of Ceylon, the promoter of the enterprise, arrived in San Antonio about a week ago, (says a *San Antonio* paper of Feb. 17) and lost no time in making the preliminary arrangements for establishing the farm. He is one of the most experienced and best known ostrich raisers in the country. In partnership with Edwin Cawston he owns two of the greatest ostrich farms in California—one at Los Angeles and one at Pasadena—which contain some 300 birds. For this season the San Antonio farm will be stocked with between thirty and forty birds. Mr Cockburn's partner, Mr. Cawston, writes that he has picked out some of the finest birds on the Los Angeles farm to send to San Antonio, and that he has already fitted up a car for their transportation.

EUCALYPTUS IN EAST AFRICA.—The German Colonial Office reports that following upon the successful plantation of *Eucalyptus globulus* in German East Africa a small plantation of *Eucalyptus rostrata* (the red-gum tree) has been laid down at the Kovai Station, and it is doing well. —*Chemist and Druggist*, March 12.

AMSTERDAM COCOA BUTTER MARKET.—Our Amsterdam representative sends us the following information concerning the results of the cocoa butter auctions held in Amsterdam on the 1st inst. Of the 70 tons of *Van Houten's* make offered, all was sold at 47 to 48¼. Dutch cents per half kilo, or an average price of 47·35 cents (about 8 3-5thd per lb.); of 20 tons of the "*Hamer*" brand 13½ tons were sold at 46½ to 46¾ cents (about 8 3-7thd to 8½d per lb.); of 5 tons from *Hollandcshe Cacaofabriek*, all was bought in; of 10 tons of *Foreign* make about 3 toos (Mackay & Co.) were sold at 45 cents (about 8¼d per lb.)—*British and Colonial Druggist*, March 4.

ADULTERATION OF FOOD—says the *Daily Chronicle* of March 4:—

What is chocolate? What is Demerara sugar? What is butter? What is whisky? What is beeswax? Judging by the information which appears in our news columns today, the authorities are disagreed, and the grocers, not being troubled by philosophic doubts serve out pretty much what they please when a customer mentions any of these familiar articles. According to an adulteration case that was tried yesterday, chocolate may legitimately contain a very large percentage of coco-nut oil and still be chocolate, whilst we have it on the authority of the public analyst for Islington that unless customers ask for pure sugar, pure butter, pure whisky, pure beeswax, pure coffee, pure anything, they may legally be served with any mixture the tradesman offers, provided it is not poisonous. Which all goes to prove that our adulteration laws are an amiable imposture.

THE SAN JOSE SCALE—We are unwilling to create needless alarm, at the same time it is our duty to warn our fruit-growers of a possible danger, against which the Canadians and some of the States, of the Union have already taken action. Considering the enormous quantities of fruit imported from Canada, some of the Eastern United States, and even California, it is but too probable that the scale will make its way to this country. In California damage to the extent of millions of dollars has been effected. Within twelve years it has infested every fruit section of San José, and reached the orchards of Oregon and Washington. Evidently, says the *Canadian Horticulturist*, this pest will infest every orchard in Canada within the next ten years unless the greatest promptitude is taken to destroy it." We have already given illustrations of the insect.—*Gardeners' Chronicle*, March 12.

THE WOMEN'S BRANCH OF THE SWANLEY HORTICULTURAL COLLEGE has an enviable position at present. During 1897 it had the largest number of students it has ever had; at one time there were thirty-five students in residence. Moreover, the authorities are able to obtain remunerative employment for all their duly qualified students; the demand for lady gardeners is greater than the supply. It is pleasent to note that the Director of Kew Gardens now employs three of the Swanley ladies; two have posts at the Edinburgh Botanic gardens; other as are as a convalescent home, an industrial farm colony, at ladies' schools and colleges; one finds employment in laying out gardens in London, under the Metropolitan Public Gardens Association. It is not generally known that four county councils—*i.e.*, London, Berkshire, Essex and Kent—grant scholarships both to men and women to be held at the Swanley Horticultural College.

COLOMBO PRICE CURRENT.

Furnished by the Chamber of Commerce.)

Colombo, March. 29th, 1898.

EXCHANGE ON LONDON:—Closing Rates *Bank Selling Rates*:—On demand 1/3 31 16; 4 months' sight 1/3 27-32 6 months' sight 1/3 7-8
Bank Buying Rates:—Credits 3 months' sight 1/4 1-16; 6 months' sight 1/4 5-32. Docts 3 months sight 1/4 3-32; 6 months sight 1/4 3-16.

COFFEE:—Parchment on the spot per bushel R14·00. Plantation Estate Coffee, f.o.b. on the spot per cwt. R77·00. Liberian parchment on the spot per bus. R5·00. Native Coffee f.o.b per cwt. R45·00 nominal

TEA:—Average Prices ruling during the week Broken Pekoe per lb. 44c. Pekoe per lb. 35c. Pekoe Souchong per lb. 26c. Broken mixed and Dust, per lb. 18c. Averages of Week's sale.

CINCHONA BARK:—Per unit of Sulphate of Quinine per lb 5½c. 1 to 5 %

CARDAMOMS:—Per lb R2.05

COCONUT OIL:—Mill oil per cwt. no quotation. Dealers' oil per cwt. R13.25 Coconut oil in ordinary packages f.o.b. per ton R295.00 to 297.50

COPRA:—Per candy of 560 lb. R42.00

COCONUT CAKE:—(Poonac) f.o.b. (Mill) per ton, R75·00

Coooa unpicked and undried, per cwt. R51.25

COIR YARN.—Nos. 1 to 8 { Kogalla R17.25 / Colombo R16.00

CINNAMON:—Nos. 1 & 2 only f.o.b. 57c.
Do Ordinary Assortment, per lb 52⅖c.

EBONY.—Per ton Govt. sales on 4th April

PLUMBAGO:—Large Lumps per ton, R400
Ordinary Lumps per ton, R380
Chips per ton, R250. Dust per ton, R170

RICE.—Soolye per bushel, { R 3.00 to 3.35
,, per bag, { R7.75 to 8.50
Coast Calunda per bushel, R3.50 to R3.75
Muttusamba per bushel, R3.40 to R4.00
Kadappa and Kuruwe per bushel, R2·87 to 3·12
Rangoon Raw 3 bushel bag:—R9.25 to 9·40

LOCAL MARKET.

(By Mr. James Gibson, Baillie St. Fort.)

Colombo Mar 29th, 1898.

Estate Parchment:—per bushel		R12 to 12·75
Chetty do	do	R11·50 to 11·75
Native Coffee		} R336 to 38
do F. O. B per cwt		
Liberian coffee:—per bush		R2·50 to 3·50
do clean coffee:—per cwt		R24 to 27
Cocoa unpicked per cwt		R48 to 51
do picked do		R50 to 52
Cardamoms Malabar:—per lb.		R1·50 to 1.75
do Mysoore	do	R1·85 to 2·25
Rice Market List		
Soolai per bag of 164 lbs nett		R7·75 to 8.50
Slate & 1st quality soolai:—per bushel		R3·20 to 3.35
Soolai 2 & 3rd. do	do do	R3.05 to 3.15
Coast Calunda		R3·50 to 3.75
Muttusamba		R3.40 to 4.00
Kuruvee (not good)		R3.00 to 3.10
Kazala		R2·90 to 2·95
Raw Rangoon Rice per bag of 3 bus.		R9·25 to 9·40
Cinnamon, per lb No 1 to 4		55 c to 57 cts.
do do 1 to 2		58 c to 60 cts.
do Chips. per candy		R80 to 82 none to be hand end of Season
Coconuts. Ordinary per thousand		R36. to 38
do Selected	do	R39 to 40
Coconut Oil per cwt		R13 to 13·25
do F. O. B. per ton		295 to 300
Copra per candy		
Marawila do		R38·50 to 40·00
Kalpitiya do		R41·00 to 42·25
Cart Copra do		R33·00 to 37·00
Poonac Gingelly. per ton		93 to 95
do Chekku	do	R87 to 92
Mill (retail)	do	R80 to 85
Cotton Seed	do	R80 to 82
Satinwood per cubic foot,		R2.00 to 2.30
do Flowered	do	5.50 to 6.00
Halmilla	do	1.30 to 2.00
Palu,	do	1.30 to 1.40

Tuun Pali	do	R1.30 to 1.40
Ebony per ton		R80 to 180
Kitul fibre per cwt		R35·00
Palmyra do	do	R9·50 to 20
Jaffna Black Cleaned per cwt		20·00
do mixed	do	R17·00 to 18·50
Indian	do	R9.50 to 20·00
do Cleaned	do	R12.50 to 20·00
Sapanwood per cwt		R45·00
Kerosine oil American per case.		R6·37 to 6·50
do Bulk Russian per tin		R2·40 to 2·45
do Russian in Case		R4.70 to R4·75
do Sumatra in Case		R4.60 to 4·65
Nux Vomica	do	R5 to 6
Croton Seed per cwt		28 to 30
Kapok no stock the season is in June		

Plumbago per ton, according to quality { Large lumps 250 to 400
do ,, 220 to 370·00
do Chips 150 to 250·00
do dust 75 to 160·00

CEYLON EXPORTS AND DISTRIBUTION.

1897-98.

COUNTRIES.	Coffee cwt Plantation	Coffee cwt N'tive	Coffee cwt Total.	Cinchona. 1898 B'nch & Trunk lb	Tea. 1898 lb.	Tea. 1897 lb	Cocoa cwt.	C'moms lb.	Cinnamon. Bales lb	Cinnamon. Chips lb.	Coconut Oil 1898 cwt	Coconut Oil 1897 cwt.	P'bago 1898 cwt.
To United Kingdom	2659	..	2659	131990	21245377	21692137	18998	88206	135621	80543	18644	11228	34893
,, Austria	..	...	..	..	3515	1305	...	..	..	33600	1201	1369	..
,, Belgium	10	..	10	..	4610	1965	250	..	7500	25200	..	..	11363
,, France	300	..	300	3345	6442	15587	..	..	12000	20216	..	..	333
,, Germany	..	..	..	..	94934	47842	399	36411	192875	138394	1212	..	11545
,, Holland	39	..	39	..	5676	3705	..	..	10000	..	..	..	..
,, Italy	..	..	..	..	750	215	..	..	16500	68768	..	..	...
,, Russia	..	..	..	..	315381	31098	..	..	..	..	..	..	...
,, Spain	..	..	..	...	10150	500	..	..	60000	11200	..	..	..
,, Sweden	1	..	1	..	11589	1850	...	..	..	..	..	..	101
,, Turkey	..	..	..	..	7326	1790	...	555	...	..	..	..	..
,, India	4	..	4	..	96947	119557	3	6654	...	...	19006	24452	147
,, Australia	585	..	585	..	3215519	2385099	..	..	4600	5040	239	836	412
,, America	100	..	100	20448	265867	208465	104	..	40000	11200	10694	5012	23566
,, Africa	..	..	..	724	120814	35332	..	1120	..	..	..	..	..
,, China	200	..	200	2026	241495	100769	..	720	20000	..	475	204	..
,, Singapore	1	..	1	..	8667	6265	193	400	..	..	26615	4517	20
,, Mauritius	..	..	..	..	..	..	..	..	..	..	..	..	..
,, Malta	..	..	...	...	19421	..	..	..	..	..	..	..	..
Total exports from 1st Jan. to 29th March 1898	3899	..	3899	167533	25674480		19947	134116	499096	394161	78086		82380
1897	4699	22	4721	126640	24653481		13636	130952	562969	257736	50637		70355
1896	6058	171	6229	115038	23240317		12459	88186	345575	211463	62914		87641
1895	20255	378	20633	251931	21614707		12891	127911	418945	159384	82004		54317

MARKET RATES FOR OLD AND NEW PRODUCTS.

(From Lewis & Peat's Fortnightly Prices Current, London, March 9th, 1898.)

	QUALITY.	QUOTATIONS.
ALOES, Socotrine cwt.	Fair to fine dry ..	44s a 100s
Zanzibar & Hepatic ,,	Common to good ..	15s a 76s
BEES' WAX, ,,		
Zanzibar & { White ,,	Good to fine ..	£7 2/6 a £7 10s
Bombay { Yellow ,,	Fair ..	£6 5s a £6 7s 6d
Madagascar ,,	Dark to good palish .	£6 a £6 7s 6d
CAMPHOR, China ,,	Fair average quality ..	95s
Japan ,,	,, ,, ,,	97s 6d
CARDAMOMS, Malabar lb	Clipped, bold, bright, fine	3s 6d a 4s
	Middling, stalky & lean	2s 9d a 3s 3d
Ceylon.—Mysore ,,	Fair to fine plump ..	3s a 4s 3d
	Seeds ..	2s 10d
,, Tellicherry ,,	Good to fine ..	2s 9d a 3s 1d
	Brownish ..	2s 6d
,, Long ,,	Shelly to good ...	2s 8d a 3s 10d
,, Mangalore ,,	Med brown to good bold	3s 6d a 3s 9d
CASTOR OIL, Calcutta ,,	1sts and 2nds ..	3¾d a 4½d
Madras ,,	..	3½d
CHILLIES, Zanzibar cwt.	Dull to fine bright ..	32s 6d a 42s 6d
CINCHONA BARK.—		
Ceylon lb.	Ledgeriana Chips ...	3¼d a 8d
	Crown, Renewed ..	4¼d a 8d
	Org. Stem..	1½d a 6¾d
	Red Org. Stem...	2d a 4⅝d
	Renewed ...	2½d a 5⅞d
CINNAMON, Ceylon 1sts	Ordinary to fine quill...	8½d a 1s 11d
per lb 2nds	,, ,, ...	7½d a 1s 8d
3rds	,, ,, ..	7d a 1s 6d
4ths	,, ,, .	6d a 1s 3d
Chips	,, ,, .	2¾d a 3½d
CLOVES, Penang lb.	Dull to fine bright bold	6d a 1s
Amboyna ..	Dull to fine ..	4½d a 5½d
Zanzibar }	Good and fine bright ..	4⅓d a 4½d
and Pemba }	Common dull to fair ...	3¾d a 4⅛d
Stems ..	Fair ..	2d
COCCULUS INDICUS cwt.	Fair ..	8s 6d
COFFEE		
Ceylon Plantation ,,	Bold to fine bold colory	110s a 121s
	Middling to fine mid ..	102s a 106s
	Low mid. and low grown	90s a 100s
	Smalls ...	70s a 85s
Native ,	Good ordinary ...	40s a 55s
Liberian ,,	Small to bold ...	35s a 45s
COCOA, Ceylon ,,	Bold to fine bold ...	75s a 78s
	Medium and fair ...	70s a 74s
	Triage to ordinary ...	60s a 68s
COLOMBO ROOT ,,	Fair to good ..	42s 6d a 45s
COIR ROPE, Ceylon ton		nominal
Cochin ,,	Ordinary to fair ..	£10 a £16
FIBRE, Brush ,,	Ord. to fine long straight	£10 a £21
Cochin ,,	Ordinary to good clean	£15 a £21
Stuffing ,,	Common to fine ..	£7 a £9
COIR YARN, Ceylon ,,	Common to superior ...	£12 a £26 10s
Cochin ,,	,, ,, very fine ..	£12 a £34
do. ,,	Roping, fair to good ..	£10 10s a £15
CROTON SEEDS, sift. cwt.	Dull to fair ..	50s a 60s
CUTCH ,, ,,	Fair to fine dry ..	9s 3d a 32s 6d
GINGER, Bengal, rough ,,	Fair ...	38s
Calicut, Cut A ,,	Good to fine bold ..	90s a 105s
B & C ,,	Small and medium .	38s a 80s
Cochin Rough ,,	Common to fine bold ..	22s a 32s 6d
	Small and D's ..	17s a 24s
Japan ,,	Unsplit ..	17s 6d a 18s 6d
GUM AMMONIACUM ,,	Sm. blocky to fine clean	20s a 50s
ANIMI, Zanzibar ,,	Picked fine pale in sorts	£10 7/6 a £13 12/6
	Part yellow and mixed	£8 2/6 a £10 10s
	Bean and Pea size ditto	70s a £7 12/6
	Amber and dk. red bold	£5 10s a £7 10s
	Med. & bold glassy sorts	80s a 100s
Madagascar ,,	Fair to good palish ..	£4 8s a £8
	,, ,, red .	£4 5s a £9
ARABIC E. I. & Aden ,,	Ordinary to good pale	40s a 62s 6d
Turkey sorts ,,		65s a 85s
Ghatti ,,	Pickings to fine pale ..	2s 6d a 40s
Kurrachee ,,	Good and fine pale ...	52s 6d a 57s 6d
	Reddish to pale selected	30s a 40s
Madras ,,	Dark to fine pale ..	27s 6d a 35s
ASSAFŒTIDA ,,	Clean fr. to gd. almonds	40s a 80s
	Ord. stony and blocky	30s a 37s
KINO ,,	Fine bright ..	12s 6d a 15s
MYRRH, picked ,,	Fair to fine pale ..	70s a 82s 6d
Aden sorts ,,	Middling to good ..	53s a 57s 6d
OLIBANUM, drop ,,	Good to fine white ..	34s a 60s
	Middling to fair ..	20s a 31s 6d
pickings ,,	Low to good pale ...	11s a 12s 6d
siftings ,,	Slightly foul to fine ..	9s 6d a 14s
INDIARUBBER, Assam lb	Good to fine ..	2s 4d a 2s 11½d
	Common to foul & mxd.	1s 6d a 2s
Rangoon ,,	Fair to good clean ..	2s 3d a 2s 11d
Borneo ,,	Common to fine ..	1s 5¼d a 2s

	QUALITY	QUOTATIONS.
INDIARUBBER, (Contd).		
Java, Sing. & Penang lb.	Foul to good clean ..	1s 7d a 2s 9d
Mozambique ,,	Good to fine Ball ..	2s 9½d a 3s
	Ordinary to fair Ball..	2s 6d a 2s 8½d
	Low sandy Ball ..	1s 1d a 1s 4d
	Sausage, fair to good..	2s 6d a 2s 11d
	Liver and livery Ball..	2s 6d a 2s 10d
Madagascar ,,	Fr to fine pinky & white	1s 9d a 2s
	Fair to good black ..	1s 10d a 2s 4d
	Niggers, low to good...	1s 6d a 1s 10d
INDIGO, E.I. ,,	Bengal—	
	Shipping mid to gd violet	4s 3d a 4s 9d
	Consuming mid. to gd.	2s 6d a 3s 8d
	Ordinary to mid.	1s 6d a 2s 5d
	Mid. to good Kurpah...	2s a 2s 6d
	Low to ordinary ..	1s 4d a 1s 10d
	Mid. to good Madras...	1s 8d a 2s 4d
MACE, Bombay & Penang	Pale reddish to fine ..	2s a 3s
per lb.	Ordinary to fair ..	1s 8d a 1s 11d
	Pickings ...	1s 3d a 1s 6d
MYRABOLANES, } cwt	Dark to fine pale UG...	4s 6d a 6s
Madras }	Fair Coast ...	4s 9d a 5s
Bombay ,,	Jubblepore ...	4s a 7s
	Bhimlies ...	4s 3d a 9s
	Rhajpore &c. ...	5s 9d a 7s
Bengal ,,	Calcutta ...	3s 6d a 5s 6d
NUTMEGS— lb.	64's to 57's ...	3s a 3s 2d
Bombay & Penang ,,	110's to 65's ...	1s 3d a 2s 9d
	160's to 130's ...	6d a 1s 1d
NUTS, ARECA cwt.	Ordinary to fair fresh...	12s a 23s 6d
NUX VOMICA, Bombay	Ordinary to middling...	4s a 5s 6d
per cwt. Madras	Fair to good bold fresh...	7s a 7s 6d
	Small ordinary and fair	5s 6d
OIL OF ANISEED lb	Fair merchantable ...	7s 3d a 7s 6d
CASSIA ,,	According to analysis..	4s 9d a 6s 3d
LEMONGRASS ,,	Good flavour & colour...	5d
NUTMEG ,,	Dingy to white ...	3¼d a 4d
CINNAMON ,,	Ordinary to fair sweet...	5d a 1s 7d
CITRONELLE ,,	Bright & good flavour...	1s 0¼d a 1s 0¾d
ORCHELLA WEED—cwt		
Ceylon ,,	Mid. to fine not woody...	10s a 12s 6d
Zanzibar. ,,	Picked clean flat leaf ...	10s a 15s
	,, wiry Mozambique	10s a 11s
PEPPER—(Black) lb.		
Alleppee & Tellicherry	Fair to bold heavy ...	4d a 4½d
Singapore ...	Fair	4⅛d
Acheen & W. C. Penang	Dull to fine	3⅝d a 4⅛d
PLUMBAGO, lump cwt.	Fair to fine bright bold	20s a 28s
	Middling to good small	15s a 19s
chips ,,	Dull to fine bright ..	10s a 15s
dust ,,	Ordinary to fine bright	5s 6d a 10s
SAFFLOWER ,,	Good to fine pinky ...	80s a 85s
	Middling to fair ..	60s a 70s
	Inferior and pickings ...	50s a 55s
SANDAL WOOD—		
Bombay, Logs ton.	Fair to fine flavour ..	£20 a £35
Chips ,,	... ...	5s a £3
Madras, Logs ,,	Fair to good flavour ..	£30 a £50
Chips ,,	Inferior to fine ..	£4 a £8
SAPANWOOD Bombay ,,	Lean to good ..	£4 a £5
Madras ,,	Good average ..	£4 a £5 nom.
Manila ,,	{ Rough & rooty to good	£4 10s a £5 15s
Siam ,,	} bold smooth...	£6 a £7
SEEDLAC cwt.	Ord. dusty to gd. soluble	70s a 80s
SENNA, Tinnevelly lb	Good to fine bold green	3¾d a 4¾d
	Fair middling medium	3d a 3½d
	Common dark and small	1¾d a 2½d
SHELLS, M. o'PEARL—		
Bombay cwt.	Bold and A's D's and B's Small ...	£5 15s a £6 12/6
Mussel ,,	Small to bold ...	£1 5s a £4 2/6
TAMARINDS, Calcutta...	Mid. to fine bl'k not stony	7s a 8s 6d
per cwt. Madras	Stony and inferior ..	4s a 6s
TORTOISESHELL—		
Zanzibar & Bombay lb.	Small to bold dark mottle part heavy	15s a 23d 6d
TURMERIC, Bengal cwt.	Fair ...	14s 3d
Madras ,,	Finger fair to fine bold bright	18s a 19s
Do. ,,	Bulbs ..	12s a 13s
Cochin ,,	Finger ..	13s a 14s
	Bulbs ..	8s 6d
VANILLOES— lb.		
Mauritius and } 1sts	Gd. crysallized 3½ a 9 in.	18s a 26s
Bourbon ... } 2nds	Foxy & reddish 4½ a 8 ,,	13s a 20s 6d
Seychelles 3rds	Lean and inferior ..	7s a 11s 6d
VERMILION lb.	Fine, pure, bright ...	2s 2d
WAX, Japan, squares cwt	Good white hard ..	37s

THE

AGRICULTURAL MAGAZINE,

COLOMBO.

Added as a Supplement Monthly to the "TROPICAL AGRICULTURIST."

The following pages include the Contents of the *Agricultural Magazine* for April :—

Vol. IX.] APRIL, 1898. [No. 10.

SEASON REPORTS FOR FEBRUARY.

WESTERN *Province.*—Paddy. Maha crop reaped, and being threshed in some places, preparations for Yala going on. Rainfall light. Crop prospects good and exceptionaly fine in Rayigam Korale.

Central Province.—Paddy. Maha cultivation in various stages, prospects good. No cattle disease reported. Rainfall registered in Matale ·41 in.

Northern Province.—Paddy. Reaping and thresning going on. Yield moderate in Mannar district, disappointing in Jaffna district. Rainfall registered in Jaffna 1·12 in. Health of cattle good a disease called munanginoi prevails among the goats in Mannar district.

Southern Province.—Paddy. Maha harvest on, preparations for Yala in progress. No. cattle disease reported.

Eastern Province.—Paddy. Munmari crops reaped in Trincomalee district. Health of cattle good. Rainfall in Batticaloa ·04 in.

North-Western Province.—Paddy. The harves is on, prospects generally good. Murrain still prevails, but is decreasing in many places. No rain in most parts, and where it occurred the fall was very scanty.

North-Central Province.—Paddy in various stages. Rainfall at Anuradhapura, 1·38 in. Health of cattle satisfactory, though murrain was reported from Eppawala Korale.

Sabaragamuwa Province.—Paddy. Maha harvest in progress in most places and outturn satisfactory No cattle disease. Rainfall at Ruanwella, 5·14 in.

Uva Province.—Paddy. Maha fields, some being shown and some ploughed. Chena crops good on the whole. Fruits and vegetables plentiful and cheap. Weather dry. A few cases of murrain were reported from Wellassa, otherwise health of cattle good.

RAINFALL TAKEN AT THE SCHOOL OF AGRICULTURE DURING THE MONTH OF FEBRUARY, 1898.

1	Tuesday ..	Nil	16	Wednesday ..	Nil
2	Wednesday...	Nil	17	Thursday ..	Nil
3	Thursday ..	Nil	18	Friday ..	Nil
4	Friday ..	Nil	19	Saturday ..	Nil
5	Saturday ..	Nil	20	Sunday ..	Nil
6	Sunday ..	Nil	21	Monday ..	Nil
7	Monday ..	Nil	22	Tuesday ..	·19
8	Tuesday ..	Nil	23	Wednesday..	Nil
9	Wednesday ..	Nil	24	Thursday ..	Nil
10	Thursday ..	·03	25	Friday ..	Nil
11	Friday ..	Nil	26	Saturday ...	·17
12	Saturday ..	·02	27	Sunday ..	·18
13	Sunday ..	Nil	28	Monday ..	08
14	Monday ..	Nil	1	Tuesday ..	·01
15	Tuesday ..				

Total..·68

Greatest amount of rainfall in any 24 hours on the 22nd, ·19 inches.

Mean rainfall for the month ·02 in.

Recorded by A. H. AHMAT.

THE VALUE OF BONE-DUST AS A FERTILIZER.

(Communicated.)

We have only just seen an article in the New South Wales *Agricultural Gazette* on the above subject, referring to certain experiments, the results of which should prove of interest to planters in this Colony who largely use bone-dust as a fertilizer.

In 1889 Professor Wagner of Darmstadt carried out a series of experiments which led to the surprising conclusion that the phosphoric acid in the ordinary raw bone-meal was so low in fertilizing value when compared with the phosphoric acid in superphosphate or Thomas slag as to be almost worthless. The estimated low value of bone-meal was based, it is said, not only upon its immediate effects but also on its after-effects. We need not refer at length to the details of Wagner's experiments, suffice it to say that equal quantities of bone-meal superphosphate and basic slag were used, and all other conditions were the same, but the results as regards both the immediate and after-effects of the bone-meal were so inadequate as to lead Wagner to put it down as practically worthless for its phosphoric acid. As a result of these experiments the Association of Bone-meal Manufacturers of Saxony appealed to Professor Märcker, of Halle, to investigate the question thoroughly. Märcker's experiments extended over 4 years (as against 3 of Wagner's) and embraced different kinds of crops and soils, and different brands of bone-dust, (raw, steamed and degelatinized,) representing the best qualities of bone-meal on the market. Prof. Wagner would appear to consider that the phosphoric in raw bone-meal, in steamed and glue-free bone-meal is about equal in value.

Where equal quantities of bone-meal and superphosphate were used, the results of the trial for early effect were as was to be expected, very unfavourable to bone-meal. As a result of a variation of the same experiment it was found that there is no advantage in mixing bone-dust with superphosphate, as the increase of yield is practically due only to the superphosphate. The soils in these experiments were sandy ones which are regarded as being particularly benefited by the application of bone-dust. The next series of experiments were conducted to test the fact whether bone-meal is really valuable for its after-effects, and, if, as it is reported to do, it permanently enriches the land.

With small quantities of superphosphate there were no striking results in the second year, as the greater part of the available phosphoric acid had already been used up in the first year. Where a larger quantity of superphosphate (but equal to the amount of bone-meal) was used, the after-effects were considerable, and though not as good as in the first year, were, nevertheless, very much better than the after-effects of bone-meal. During the third year, the after-effects of bone-meal as compared with superphosphate, were found to be still less favourable.

Another series of experiments went to show that the after-effects of bone-meal are not increased when used in conjunction with superphosphate. The results of the experiments above quoted would appear to warrant one conclusion, viz., that, at all events, for sandy soils, which are exactly the soils supposed to be benefited by bone-dust, the action of the phosphoric acid in bone dust does not approach the action of the soluble phosphoric acid in superphosphate, whether the bone-dust is used alone or with superphosphate, whether in respect to the immediate results or after-effects.

The next series of experiments were undertaken on different classes of soils, relatively rich in phosphoric acid, having been used in previous years for bone-meal experiments. The soils included sandy soils, loam, humous loam, clay loam, sandy loam, humous sand, &c. The results were again unfavourable to bone-meal manure. These experiments, as Prof. Märcker observes, would have an unwelcome result if it were not possible to treat bone-meal in a cheap way so as to make it more effective, and this can be done by means of a small quantity of sulphuric acid not enough to produce superphosphate but bi-calcium phosphate, a form which, though insoluble in water, is ready available to the plant and little inferior in fertilizing value to superphosphate. This can be done by adding to every 100 lbs. of raw bone-meal, 20 lbs. of acid of 60° strength (Baume) or 40 lbs. to every 100 of glue-free bone-dust. It is advisable that the bones should not be in too fine a powder, but in a coarse state about the size of peas. The proportions given are said to be the most effective.

To quote Prof. Märcker's own words: "One may twist and turn the matter as one will, whether used with cereals or crucifers, in sand, clay, or loams, rich or poor in phosphoric acid, in cold or hot years, whether in respect to its effects upon the first or upon succeeding crops, the result is always the same, namely, the action of the phosphoric acid in bone-meal, whether raw or steamed, or glue-free, is invariably unsatisfactory, and the author comes to the conclusion that it is high time that raw, steamed and glue-free bone-dusts ceased to be regarded as phosphoric fertilizers; they require previous treatment just as the mineral phosphates do, in order to make effective fertilizers of them, and the author believes that the future of the bone-meal industry lies in the preparation of these products which the experiments here recorded have shown to be effective."

The inference to be drawn from these experiments is that the beneficial action of bone-meal—for that it is beneficial cannot be gainsaid—is due not to the phosphoric acid but to the nitrogen it contains. Prof. Märcker is reported to be—at the date of the article here summarized—engaged in a series of experiments, with the object of ascertaining more exactly the nature of this action. As far as he has gone trials have shown that the effect of the nitrogen in bone-meal is 70 to 80 per cent of that produced by nitrate of soda in sandy soil, and from 55 to 70 per cent in humus loam. It is said that an independent series of experiments carried out by Dr. Liechti and Dr. Voght of the University of Bern in 1896, goes to substantiate the results of Wagner and Märcker. In these trials it came out that the effects of Thomas phosphate were far superior to those of raw as well as degelatinized bone-meal.

A question that suggests itself to our mind is, to what extent is bone-dust affected, *i.e.*, rendered

available to plants by the different climatic conditions (temperature, rainfall, humidity of the air &c.) in the tropics? Again, is the gradual conversion of insoluble into soluble phosphate sufficient for the needs of perennial vegetation such as tea and coconuts? These and many more questions occur to us as they will to our readers. We should like to know whether any one of our coconut planters have pitted bone-dust against super-phosphate and noted results? The views of Mr. Cochran and Mr. Hughes ou the subject would be interesting.

OCCASIONAL NOTES.

The students of the School of Agriculture were taken over Messrs. de Soysa's coconut mills on Friday the 11th March, and witnessed the various processes in the manufacture of dessicated coconuts, while the preparation of copperah, coconut oil and coir was also explained to them. Our thanks are due to the proprietors of permitting the agricultural students to visit their works, and to the manager of the mills for kindly showing them over the premises and carrying out special operations for the benefit of the visitors.

A sale of stock drafted for the Government Dairy herd was held at the School of Agriculture on the 4th March, Mr. A. Y. Daniel acting as auctioneer. In spite of the wet weather the attendance was fair, and among those present were a few well-known Estate proprieters, such as Mr. F. Beven, Dr. Rockwood and Mr. W. Jardine. The following statement gives particulars of the sale:—

Cows.—Nancy, R33, Mr. Abdul Raiman; Maggie, R26, Mr. F. Beven; Tulip, R41, Mr. W. Jardine; Sunny, R55, Mr. W. P. D. Vanderstraaten; Bee, R31, Mr. Beven; Molly, R60, Mr. A. Raiman; Ellen, R44, Dr. Rockwood; Jessie, R25, Mr. Vanderstraaten; Pearl, R52, Dr. Rockwood; Polly, R91, Mr. A. Raiman; Ila, R30, Mr. Raiman; Phyllis, R72, Mr. Jardine; Cowslip, R55, Mr. Chas. Pieris; Hilda, R35, Mr. Vanderstraaten; Mary, R42, Mr. J. de Vos; Edith and calf, R62, Mr. Kretser; Effie and calf, R65, Mr. de Vos; Minnie and calf, R36, Mr. Vanderstraaten; Frixy and calf, Rs 31, Mr. Beven; and Ranee and calf, R38, Dr. Rockwood.

Calves.—1. Dr. Rockwood, R47; 2. Mr. R. Pereria, R41; 3. Mr. Dias Bandaranayake, R45; 4. Mr. Chas. Pieris, R20; 5. Mr. Pieris, R19; 6. Mr. F. Beven, R17; 7. Dr. Rockwood, R20; 8. Mr. Pieris, R28; 9. Mr. Vanderstraaten, R31; 10. Mr. Jardine, R70; 11. Dr. Rockwood, R45; and 12. Mr. Jardine, R100.

Mr. G. W. Sturgess, Colonial Veterinary Surgeon, who left Colombo for Karachi by the S.S. "Laos" about the middle of February, returned to Colombo on Saturday the 12th March by the S.S. "Independent" with some fresh stock for the Government dairy. The herd consisted of 32 cows (14 with calves) and a bull. The animals arrived in good condition and were safely landed the same evening—under the supervision of the Superintendent and Manager of the Dairy—and after being driven to the School of Agriculture, were placed in quarantine in the Government Dairy quarantine shed. The cattle are a nice lot, and are all of the Sind breed.

In an article on the Coconut, contributed to the January number of the *Queensland Agricultural Journal*, by Mr. E. Cowley, the writer says: "The one great factor that must be considered in this, as in other tropical pursuits, is that of labour. Machinery of modern type has, of course, been introduced to deal with the coconut, and it is highly probable that as yet the fibrous covering has not been dealt with, so that the most economical results have been obtanied. The extraction of the kernel known in commerce as copra, has also to receive attention from the mechanical inventor. The difficulty here is the hard shell and the extraction of the keruel. The old-fashioned method of breaking the shell and scraping out the contents with the curved sharp knife will have to be improved. Once the kernel is removed, the after-manipulation is simplicity itself." We would only add that the old and slow process of breaking the nut and liberating the kernel has now been entirely superceded by the use of the circular saw worked by steam power, with the result that the work is done with wonderful rapidity, the kernels being got out entire, while it is doubtful whether the excellent mechanical devices for treating the fibre could be much improved upon to give more economical results. To those who have been used only to the slow, tedious methods of dealing with the coconut once in vogue, the work of our modern coconut mills will come as a revelation.

Ngai or Ai Camphor is the subject of an instructive contribution to the January number of the *Queensland Agricultural Journal* for January last. As far back as November, 1895, an account of this substance was given in the Kew Bulletin where the plant yielding Ai Camphor was identified as *Blumea balsamifera.* In the *Agricultural Ledger* No. 5 of 1896, "Camphor," reference is again made to it under the head of Ngai Camphor of Burma and China. We there read that the Camphor is manufactured very largely at Canton, and that it is probably got from several species, that most frequently employed being *B. balsamifera.* Ngai Camphor is said to be chemically more allied to Barus Camphor (*Dryobalanops camphora*) than to China Camphor (*Cinnamomum camphora*), and is in poiut of price intermediate between the two latter forms. Good Barus is said to fetch as much as R80 per lb., whereas common Camphor is little more than half that sum per cwt. Trimen in his Flora has the following note referring to the plant under notice:—*Balsamifera D. C.* (*Conyza balsamifera* L.) is recorded for Ceylon by Moon whose locality is Kandy, and by Thwaites whose so named specimens collected in Trincomalee by Glenie in 1862, which are C. P. 3665. (See *Laggera aurita*). The true *B. balsamifera* is native to Assam, Burma, and Malaya; it was, however, called *Conyza abor Zeylonensis*, &c. by Plukenet, and on that account got included in Burm. Thes. 74.

"Ramie, its Cultivation, Decortication, Treatment, and Uses," is the little of a pamphlet isued by Messrs. Macdonald, Boyle & Co., the patentees of the decorticating and degumming process known as the Boyle process. The Ceylon agents for the firm are Messrs. Lee, Hedges & Co. of Colombo, the head office being at No. 39, Victoria Street, Westminster, London, S.W. The pamphlet contains an analysis of the plant, directions for planting and harvesting, estimates of crop, plant and machinery and other information that will be useful to intending growers, Tho most suitable areas for planting are within the tropics, and especially within 10 degrees North or South of the Equator, where there is a moist climate, and very little variation in the temperature, or in the rainfall throughout the year. For other facts and figures we must refer our readers to the pamphlet itself, for a copy of which we are indebted to Messrs. Lee, Hedges & Co.

We have received the third Circular issued by Mr. A. Baur, proprietor of the Ceylon Manure Works, referring to fertilizers for tea, coffee, cocao, coconuts, paddy, &c. The price per ton for the fertilizers varies from R125 to R135, the terms being net cash delivered at the Colombo Railway Station. According to the Circular the materials employed are of the best only, blood, fish, raw-bones and refuse, saltpetre being excluded. $\frac{2}{3}$ to $\frac{3}{4}$ of the phosphoric acid are said to be in a readily available form, the balance being more readily decomposable than steamed bones. The percentages (except in the case of tea for which the percentages have been fixedby Mr. John Hughes) have been revised by an Agricultural Chemist with considerable experience and personal knowledge of Ceylon. Mr. Baur also advertises almost every description of manure, in addition to his mixed fertilizers.

CEYLON *V.* COCHIN COCONUT OIL.

The following information derived from Cochin and Calicut gives further interesting information with reference to the manufacture of Cochin oil. "The superiority of 'Cochin' over 'Ceylon' oil lies in the finer quality of the former, occasioned by only *white sun-dried* Copperah being used in its manufacture. The European merchants who get their supply of oil from the native dealers, I understand, strain it properly before exporting it. It appears that there is also an inferior class of oil made here (Calicut) out of inferior Copperah. The inferior Copperah consists of unseasoned coconuts. This is not exported to European or American markets, but only to Asiatic ports. The term 'Cochin oil' is not a trade name but means the produce of Cochin. Some of the European merchants who were consulted are unable to give any further particulars in the absence of information as to the methods adopted in Ceylon for the manufacture of Coconut oil."

A communication from Cochin says, that if the coconuts are gathered every second month, *i.e.*, six gatherings a year, when they should be well seasoned and dried in bright sunshine for full seven days, the Copperah will make very good white oil, fit to be shipped to any European port. If any of the nuts are gathered earlier these unseasoned nuts will, when converted into Copperah and mixed with the rest, go to spoil the colour and purity of the oil; the Copperah from unseasoned nuts also yield less oil than that from well-seasoned ones. That Colombo oil is not so much appreciated as Cochin oil is said to be attributable to the fruits there being dried by smoke. Indeed, no pure oil can be expected from nuts dried in smoke. Where it is good it is due to the vigilant care of the supervisors.

The above information coming, as it does, from the centre of the 'Cochin oil' industry is particularly valuable, and from it, we may infer, that it is the careful method of preparation that makes the Cochin oil superior to Colombo oil. A dry sunny clime is what seems to be essential for good Copperah, and we have been told by more than one contributor to the *Observer* that oil equal to that of Cochin is produced in the dry parts of the Island. There is no doubt something in the after-treatment of the oil, such as the "careful straining" (why not also bleaching?) referred to in the first communication. Our best thanks are due to the Indian official for procuring the opinions which we have given above.

SOME IMPORTANT AGRICULTURAL-CHEMICAL FACTS.

Prof. Maercker, of Halle, in an address delivered before the German Chemical Society, spoke of the advances of Agricultural Chemistry during the last quarter of a century, and referred to many important facts that have been established mainly as the result of German research.

The chief sources of our knowledge of plant-food has been the method of water culture introduced by Sachs, Knoop and Nobbe, and the method of Sand Culture of Hellriegel, by which experiments were carried on in pure media, which not only make it possible to find out what substances are essential to plant life, but also the part played by each. By this means it has been ascertained that phosphoric acid is essential for the formation of nitrogenous substances, since the albumens which are of fundamental importance in the transformation of substances in the plant, result from an intermediate phosphoric acid compound as is indicated by the occurrence of lechithin in protoplasm. Again, iron is an essential constituent of chlorophyll and sulphur of albumen. The true function of calcium was for long doubtful; its action is now known to be of a "medicinal character," siuce it serves to neutralize the poisonous oxalic acid which is always an intermediate product of the oxidation of the carbohydrates. It was formerly thought that calcium fulfilled some important function in the leaves, as it was chiefly found in the foliage of plants. Since, however, the leaves are also the chief seat of the oxalic acid, this distribution of calcium is easily explained. The part played by potassium has only within the last three years been explained by Hellriegel, who by exact experiments with beetroot showed that the amount of sugar in the beet stands in close

relation to the amount of potassium provided. P. Wagner has made the interesting observation that the potassium may be *partly* replaced by sodium.

The exact value of magnesium is not yet well understood, but it appears to be of importance in the formation of the nitrogenous substances of seeds, as in these considerable quantities of magnesium phosphate occur.

Nitrogen is, of course, an indispensable plant-food, for it is an essential constituent of albumen.

In addition to the quantities of mineral substances required by plants to enable them to grow healthily, further quantities are found to be essential to satisfy what has been termed (though not very aptly) the mineral hunger of the plant. This is explanied by an example. E. Wolff found that for the production of parts of the oat plant (dried), ·5 parts of phosphoric acid were necessary when the remaining mineral substances were supplied in excess. The following quantities of mineral matter were found to be essential for 100 parts of oats: Phosphoric acid, ·5; Potash, ·8; lime ·25; magnesia, ·2; and sulphuric acid, ·2; making a total of 1·95. There is, however, no oat plant which contains so little as 1·95 per cent of mineral substances, the minimum being ·3 per cent. The difference (1·05) is the measure of what has been called the "mineral hunger," and represents the mineral matter which does not perform any special function. The excess may be supplied in the form of some indifferent substance, as silica. This observation is said to be of considerable interest to the farmer, for it shows that it is not economical to manure crops with pure substances.

It has been found, unfortunattely, that the chemical analysis of a soil is of little use as a guide unless accompanied by a "mechanical analysis," or a determination of finely-divided constituents present in the soil, which form the only part that presents a sufficiently large surface for the exercise of the solvent action of water and its dissolved carbonic acid. There is one case in which chemical analysis is said to be of the greatest importance, viz., when there are traces only of some necessary elements in the soil. Here there is a question of a need for a manure containing this substance. If on the other hand large quantites are present, it does not follow that there is a sufficiency in the soil even when the latter is in a satisfactory state of division, for the substance may be present in an insoluble refractory form. This is commonly the case with nitrogen, which exists in the soil chiefly in the form of a mixture of indefinite nitrogenous substances known as *humus*, or mould. These substances sometimes easily give up their nitrogen to plants, but in other cases are very refractory. The uncertainty as to their action is indeed so great that certain peaty soils are known which consist almost entirely of humus, but contain nevertheless an insufficiency of available nitrogen.

Phosphoric acid affords another illustration. The soluble phosphoric acid of the manure is absorbed by the soil as dicalcic phosphate, which is comparatively easily soluble in the soil water. With time, however, it may change in the soil to the insoluble tricalcium phosphate or even to iron or aluminium phosphates, which are still less soluble.

In the case of calcium, chemical analysis has been found to be of considerable service in determining what manuring is required, since calcium is chiefly valuable in the form of carbonate or humate, and these are easily estimated in the soil.

Since then the direct method of soil-analysis is an insufficient guide to manuring, it is fortunate that chemists have been able to develope successfully an indirect method. This is the *cultivation method*, by which plants are allowed to grow in the soil under examination, after taking care to provide a sufficiency of all plant-food stuffs except the one, *e.g.*, phosphoric acid, whose presence in available form is being tested. The plants are then analysed, and the results compared with the analyses of the same plants grown on soils provided with all the necessary plant food stuffs. As an important result of the method it has been found that different plants take up very different quantities of the same mineral substances. On this is largely based the system of rotation of crops, where the second crop is so chosen that it chiefly removes the ingredients of the soil which have been left by the preceding crop.

With the aid of the cultivation method it has also been possible to draw up the following table, which represents the relative values of the different nitrogen compounds for plant-food:—

Nitrogen of Saltpetre	...	100
" " Ammonia	...	85-90
" " Albumen	...	60

This table may be made use of in determining the nitrogen value of a manure.

The cultivation method may be used for testing the value of manures of all kinds. Thus it was by a few cultivation experiments that Waguer in Darmstadt first showed the very great value for agricultural purposes of the "Thomas" Slag, produced as a bye-product in the manufacture of iron by the basic process of Thomas-Gilchrist. The million tons of phosphate meal annually produced in Germany is now wholly utilised by the agriculturist, and its preparation for the farmer has become an important off-shoot of the iron industry.

Prof, Maercker's address then goes onto deal with other points which we may refer to in a future issue. Those we have noticed are undoubtedly of interest and value, and deserve to be carefully noted by our readers.

NOTES FOR CATTLE OWNERS IN CEYLON.*

This is the title of a little pamphlet of 16 pages by Mr. C. W, Sturgess, Colonial Veterinary Surgeon. The headings of the different chapters as given in the Table of Contents are: Food, Water, Shelter, Signs of Health and Disease, Breeding and Rearing, Prevention of Disease, Contagious Diseases, Nursing, and a List of simple Veterinary Medicines. What will be most interesting to cattle owners is, of course, the treatment recommended for the various forms of cattle disease that occur in the Island. The author, however, refers only to the two common forms of

* Printed at the Government Printing Press.

contagious disease, viz., Cattle Plague (Rinderpest) or Murrain, and Foot-and-Mouth disease or Hoof-and-Mouth disease, and we quote the passages under the head of "treatment" for the benefit of our readers.

Treatment for Cattle Plague.—The diseased or suspected animals must at once be isolated, and all communication between healthy and diseased animals absolutely cut off. A supply of good water may be placed with the animals, in which is dissolved ½ or 1 oz. of saltpetre. At the first, when there is constipation, ¾ lb. of Epsom salts or one pint of linseed or castor oil may be given as a laxative. Either of the following prescriptions may be given as medicine :—

Prescription I.

Hyposulphite of Soda	...	2 oz.
Quinine (or Quinoidin)	...	2 drs.

To be given every day in one quart of congee to full-grown cattle. If diarrhœa sets in with blood in the fœces, powdered opium 1 to 2 drs., or bhang ½ to 1 oz., should be combined with the above.

Prescription II.

Hyposulphite of Soda	...	2 oz.
Powdered Cinchona bark	...	1½ oz.

To be given daily in a quart of congee.

Prescription III.

Quinine (or Quinoidin much cheaper) 2 drs.
To be given daily in a quart of congee.

Prescription IV.

The following is said to have been used with good effect in India :—

Camphor	...	...	2 drs.
Datura	...	...	2 drs.
Chiretta	...	...	1 oz.
Arrack	...	...	4 oz.

To be given in two quarts of gruel morning, and evening. The animals must be well-nursed and given congee and decoction of bael fruit, and good water and any soft food. No solid hard food must be given for some time. Milk and sloppy bran mash may be given, and a small allowance of tender young grass; during recovery such medicines as chiretta, arrack, Cinchona bark.

Treatment for Foot and Mouth Disease.—All the affected animals must be segregated, and the rules mentioned under "Prevention of Disease" put into force as far as possible.

For mouth and feet dressings the following are ample, good and cheap :—

Mouth Dressing.

Powdered alum	...	1½ oz.
Water	...	1 pt.

A little to be poured into the mouth night and morning.

Feet Dressing.

Powdered sulphate of copper		...	1 oz.
Alum	...	...	1 oz.
Water	...	...	1 pt.

Apply to the sores on the feet twice a day. The feet must be kept quite clean by washing with water containing a little Jeye's fluid daily.

When the sores on the feet do not heal properly the following dressing should be applied in addition to the above twice a day :—

Margosa oil or Coconut oil	...	8 parts.
Turpentine	...	2 "

Internally give ½ or ¾ lb. Epsom salt daily for three or four days in a quart of congee, which will relieve the constipation and fever.

We hope the author will also treat of ordinary cattle ailments, including those incidental to milking stock and calves in another pamphlet, as the want of a knowledge of the treatment of many of these (such for instance as Hoven) often results in the loss of valuable animals.

FRUIT CULTURE.

(*Continued.*)

One way of preventing the dissipation of moisture consists in covering the soil round the tree or plant with a layer of short broken straw or waste stable fodder. Gardeners knew this plan of old and call it "mulching." Under it, however dry the air, this soil is always more or less moist, never cakes into a crust and never robs the moisture in the region of the roots. In fact, loss of moisture through capillarity is stopped by the capillary tubes being blocked up and prevented from communicating with the atmosphere. About a fourth only of the total effect in preventing loss of moisture is due to the mulch insolation or shading the soil from the rays of the sun, the rest is due to its stopping the capillary withdrawal of the soil moisture at a point short of the evaporating surface. If it were possible to completely mulch the soil of an orchard in this manner, there would rarely if ever be sufficient dry of the ground to cause wilting or dropping of the foliage due to want of moisture. But the method is generally possible only on a small scale. One objection, even if it were generally possible, is the danger from possible fire in dry weather. Mulching has also been used with success on hill slopes in preventing washing-away of the soil.

Another way of preventing loss of soil moisture is by means of a soil mulch. If the top tilth were constantly kept broken up and never allowed to settle down into a close crust, it will almost as effectually check loss of deep-seated moisture by capillarity as would a mulch of straw. For this reason the soil between the rows of trees in an orchard must be kept constantly stirred to the depth of 3 or 4 inches This is now commonly done on large areas by means of the implement known as the cultivator. One result of this constant stirring is that the land is kept perfectly clean. Nothing is more strenuously insisted on in fruit-culture by the best authorities—men who are speaking of their own practice upon farms of immense area—than this practice of keeping the surface soil in a loose powdery tilth.

BUFFALOES AS DAIRY STOCK.

We are indebted to Capt. Channer for a cutting from the *Pioneer* of Feb. 18th which he sends us from Agra, with the remark that milch buffaloes if kept on the soiling system are more remunerative than cows, that they should find the climate of Ceylon suitable, and that they should

give more milk than an ordinary Australian cow. But how are we to get over the prejudice in Ceylon against the use of buffalo milk? We remember Mr. Mollison, the Supdt, of Farms, Bombay Presidency, being both astonished and amused to hear of it? People here no doubt base their objections to buffalo milk on the habits of the amphibious Ceylon buffalo fed on coarse and unwholesome food. Our first experience of the Indian milch buffalo was at Poona where we were much struck by the magnificent specimens of the Surat and Jafferbadi breeds kept in the dairy. Here is what we wrote at the time of our visit, early in 1893 :—

"Buffaloes are in great favour on the Bombay side as milk and especially butter producers, and much surprise was expressed by those engaged in dairying at my statement that there is an insurmountable prejudice in Ceylon against buffalo butter. In the Bombay Presidency nearly all the butter is made from buffalo milk, the produce being slightly dyed with anatto... Colouring with a standard solution of anatto is of course quite common in English dairies. The Surat buffalo is, according to Mr. Mollison, unsurpassed as a butter producer, and even in the hot weather, while I was there, 1 lb. of butter was being got from 10 lbs. of milk, and the best milker was producing 36 lbs. of milk. With the price of butter at 12 annas (or 75 cts.) per lb., a good Surat buffalo thus gave by sale of its produce nearly R3 per day. In Poona, buffalo milk was selling at a higher price than cow milk."

We have more than once recommended that the miserable breed of Ceylon buffaloes should be improved by the introduction of some good blood from India, and we hope that this will be remembered in connection with the breeding establishment at Walapana which is spoken of. Here is a reference to the Allahabad Dairy from the cutting sent us by Capt. Channer :—

One of the most successful departments of the Allahabad farm is the dairy, from which the troops draw their supply of rich wholesome milk and butter made according to British methods by the aid of British dairy machinery of the most approved pattern. Three hundred female buffaloes and two hundred milch-cows are housed and kept on the "soiling system," being let out merely for exercise for four or five hours in the forenoon before the greatest heat of the day occurs. The buffalo is the great milch-cow of India, yielding double the amount given by an ordinary Indian cow, and, *when well fed and cared for* producing milk of extraordinary richness in butter-fat and milk solids generally. One pound of butter can be produced from one gallon of such milk—an amount more than two and-a-half times that yielded by average cows' milk in Great Britain. It is generally believed that buffalo milk is rank in flavour and inferior in quality, but that is true only of animals which feed on village garbage. Although it possesses, partly owing to the large amount of solids present, characteristic features which enable the palate to distinguish it from cows' milk, consumers who have had experience of it immediately complain if cows' milk is substituted for it.

The best female buffaloes come from the districts of Hissar and Rohtak, and cost from R100 to R300. Their daily average yield while in milk is four and-a-half gallons, while some have been known to give eight gallons a day. This is an indication that the practice adopted at Allahabad of keeping bulls specially selected from heavy-milking families will ere long greatly raise the yield of the herd.

In addition to grass, silage, or hay, according to the season, an allowance of 7 lbs. of concentrated food, consisting of linseed, cottonseed, and pulse-husks, is given in three feeds daily to animals, in full milk, the amount being lowered as the yield decreases towards the end of the season. The total annual cost per head, including a due proportion of the remuneration of an attendant, who receives eight rupees a month or £6 a year, is about £11.

Good butter sells freely in India at 11d. per lb. ; but the white lard-like appearance of buffalo butter necessitates the colouring of the cream before churning, to please the eye of the consumer, though the quality is not thereby improved. The margin of profit at the above cost of production is quite large enough to make it possible to develop a remunerative trade in the export of butter to Europe.

The milkers employed are Punjabi men with very powerful wrists, as may be gathered from the fact that each milks ten cows and ten buffaloes morning and evening. Village cattle are prevented from passing the farm boundaries, with the object of warding off the various forms of contagious disease which are so common among Indian cattle and of averting the evil consequences which would result if the inferior bulls, herded with them, were to approach the selected females of which the dairy is made up.

Young buffaloes begin to be milk-producing at about three and-a-half years of age, and young cows at three years. It is much to be deplored that in the surrounding district good cows are decreasing in numbers, and consequently rising in price. Prices have gone up within recent years from R50 each to R100 and R120 (£3 2s. 4d. to £6 6s. and £7 12s.), chiefly owing to large numbers of the best milkers being taken to Calcutta and Bombay and slaughtered, after milking for but one season. This custom is mainly due to the present impossibility of getting food to tide them over the few months when they are not in milk and, in some measure, to the change of surroundings and probably to foodproducing temporary barrenness. It behoves Government to attempt some means to stop or minimise this disastrous drain upon the best milking stock of the country. And surely something could be devised to bring about the desired result without interfering with the freedom of action of those engaged in the business. Another almost equally important result to be achieved, so far as these great centres of population are concerned, is the development of a cheap and abundant milk supply, which would not be subjected to the dangers of adulteration now prevailing.

In consideration of the value of the produce of milch-cattle, it was found that to keep all progeny of the cows at Allahabad was too expensive. An annual fair has been established, at which most of the superior young bulls bred on the Government farm are disposed of to the natives at twelve to fourteen months old, when

the most dangerous period for stunting their growth by an insufficient supply of food is past. The natives can complete the rearing of them at little cost by using up spare or unmarketable fodder, the attendance being supplied without outlay by the members of the family. The price the native pays is from £1 10s. to £2 10s., and when the animals and their male progeny are three and-a half to four years old, and fit for work and transport purposes, the Commissariat Department buys them in at from £4 10s. to £5, only exceptionally good specimens bringing higher prices.

RINDERPEST EXPERIMENTS IN SOUTH AFRICA.

In the December number of the Magazine an account was given of the serum inoculation for Rinderpest. Experiments in this method were started by Veterinary Surgeons Pitchford and Theiler in the Transvaal, and were developed and brought to a successful issue by the French experts Drs. Danysz and Bordet, assisted by Mr. Theiler. The *Cape Agricultural Journal* of the 6th January contains a fuller report of the work of these French scientists, who claim not only a preventive but a curative virtue for their system of inoculation with the serum, or rather the difibrinated blood of "salted" animals. A further advantage claimed for this method is that its protective effect is speedily produced.

The most suitable period for drawing blood used for inoculation is from 1½ to six months after the animal is salted for rinderpest, cattle that have suffered most from the disease being selected for the purpose. The maximum strength of the blood is reached about two months after the cure; but instead of making use of the blood of animals simply salted, it is recommended to increase its immunising property still further by subjecting them to two or more injections of virulent blood before bleeding them.

Where a great number of animals are to be inoculated, defibrinated blood is preferred to serum, as the former is more economical and can be more quickly and cleanly prepared. The injection is to be made as soon as possible after the blood is prepared, and unless strict precautions are taken it cannot be kept longer than one day. This defibrined blood can be used either for (1) animals in whom the disease has already developed, (2) those that already possess its germs and in whom the disease is in its incubative stage, or (3) animals that have not yet been affected by the contagion but are in danger of catching it. When those of the last-mentioned description are injected, that is when the inoculation is intended as a preventive, the animals are brought into close contact with the sick ones on the same day or the next, so that they may contract a mild form of the disease and recover, and thus get permanently salted. When animals already sick are to be treated larger doses of the blood should be injected so as to mitigate the effects of the virus in their system and cure them. Out of 336 head of cattle which were inoculated by the French experts, no less than 309 were successfully salted; the death-rate thus being only about 8 per cent.

The instruments and appliances necessary for this method of inoculation are an enamelled pan that will hold about ten bottles, a trocar, a scalpel, a brush made of iron wire, and hypodermic syringes. Strict cleanliness must be observed in the process of drawing blood from the salted animal, as well as during defibrination and inoculation; and none of these operations must take place in the sun. The particulars as to inoculation and subsequent treatment are as follows:—

The healthy animals each receive a first injection of 100 c. c. of blood. They are then brought in contact with the sick, or, if possible, infected by spreading on the nose the contents of the bowels of an animal that has just died of rinderpest. The contact must be kept up for several days so as to ensure speedy infection. They receive a second injection (of 100 c. c.) five or six days after they are infected.

"To be thoroughly salted the animals must become sick and recover. But it may happen that out of a herd brought under protective treatment, a certain number of animals become sick only from twenty to thirty days after the injection, that is to say, at the moment that the animal loses from its body the blood which should protect it from the deadly disease. In such cases a fresh quantity of 100 to 200 c. c, of blood must be injected in order to cure them and thoroughly salt them"

The infected cattle must be carefully fed and nursed as in ordinary rinderpest cases.

Animals already sick must be injected for the first time with 200 to 300 cubic centimeters of blood from salted animals, and two or three days later there must be a second injection of from 100 to 200 c. c. of blood if the cases do not get better.

In conclusion, it is necessary for us to know the relative merits of the above method as compared with Dr. Koch's. Each of these has its proper place and application, and in this connection the Report of Veterinary Captain Haslam is very important as summing up the opinion of a recent Congress of Veterinary Surgeons and Bacteriologists assembled at Johannesberg. The bile inoculation invented by Dr. Koch is considered the best for uninfected herds while rinderpest prevails in the neighbourhood; and the immunity produced by bile is said to be increased to an unknown extent by injecting, 12 days afterwards, the blood of an animal suffering from rinderpest. The serum or blood system of inoculation is considered the only suitable remedy for infected herds.

Mr. Haslam, however, says: "There can be no doubt that all modes as yet known of dealing with rinderpest in South Africa are imperfect and much work still requires to be done." It will thus be found that while seeking to profit by the labours and researches of eminent bacteriologists, we cannot at least for the present afford to despise such simple and homely methods of prevention and suppression as quarantine, isolation, segregation, disinfection, &c.

GENERAL ITEMS.

Prof. Wallace, of the Edinburgh University, has contributed an interesting paper on the Dairy question in India and the growing of fodder for cattle. He favours the system of co-operative dairying for which he believes there is a great future in India. The case of the Allahabad Dairy Farm, to which we made reference in our article on Buffaloes as Milking Stock, is quoted as an instance of remunerative dairying which might be emulated.

The following, says the *Queensland Agricultural Journal*, may prove of use to those who would be glad to know the area of oddly-shaped field without recourse to a Surveyor: 5 × 988 yds., 10 × 484 yds., 40 × 121 yds., 70 × 69½ yds., 80 × 60½ yds., 60 × 726 ft., 110 × 397 ft.,, 130 × 363 ft., 220 × 181½ ft., or 440 × 99 ft., contain *one acre.*

Mr. H. C. Russel, Government Astronomer of New South Wales, mentions the following fact in disproof of a generally accepted belief:—The destruction of forests in New South Wales from the time that ringbarking was introduced, and for some 15 or 20 years after, would seem to have been more rapid than the destruction of any other forest in the world, and during that period the rainfall gradually increased. There is a clear proof that the rainfall in this part of the world did not get less as the trees disappeared; and in other countries where the question has been fully investigated, it has been found that the rain comes whether there are trees or not.

Albert Gale, an authority on Bee-culture, writing on the influence of bees on crops, makes some interesting observations regarding pollen. He refers to the variegated laurel *(Aucuba Japonica)* a dioecious tree which was introduced into England by the Dutch from Japan. For a long time no seeds of this tree could have been got owing to the fact that the plants first introduced were "female" ones, till a Mr. Fortune brought over some "male" plants, when the original trees produced an abundance of fertile seed. Now, he adds, the pollen of the variegated laurel is an article of commerce in the London Covent Garden market! Referring to the enormous number of pollen grains discharged from flowers, he mentions the fact that the flowers on a Chinese laburnum (*Wisteria Sinensis*) where calculated to contain no less than seventy-seven billions of pollen grains.

The Holstein or Frisian breed of cattle is well-known for the milking qualities of the cows. In an account of the breed by the Principal of Hawkesbury Agricultural College, reference is made to a imported cow by this breed named "Dairymaid," whose milk records in Victoria are said to have been never surpassed. In 1887 she yielded, at a trial, 128 lbs of milk in two days, this quantity producing 4 lbs. 11¾ oz. of butter. The yield of milk given above is equivalent to 78 "bottles" (26 oz.) or an average of 39 bottles a day.

Telogony is a strange word to many and therefore needs some explanation. It is derived from two Greek words meaning "at a distance" and "offspring," and may be freely translated as the science of remote influence in the production of species. Briefly, the question which this science sets out to answer is, Does the first impregnation of the ovaries influence several or all the subsequent progeny of the female? In the experience of many breeders the facts appear to favour an affirmative answer, but the absence of a carefully organised series of experiments has hitherto made it impossible for anyone to take up a positive attitude. Prof. Cossar Ewart, so well-known from his connection with the Edinburgh University, is carrying on such a series of experiments, using Zebra stallions for first impregnating the ovaries of males, owing to the characteristic markings of this class of animal. An account of the Professor's work, as far as it has gone, is given in *The Scottish Farmer* of February 19th, and so far there appears to be grounds for believing in telogony or permanent infection of the germ, but it is impossible to dogmatise yet till the experiments have advanced a further stage.

One of the dangers of unboiled milk is poisoning by tyrotoxicon, a characteristic milk product, described as an unstable poison, which is destroyed at a temperature 18 degrees below boiling point (194° F). The symptoms of this form of poisoning are nausea, violent headache, convulsions, and, in the case of death, a blanching of the alimentary canal: The poison particularly affects young children: In a case which occurred at Halifax, the jury emphasized the recommendation that milk should always be boiled before being given to young children.

The addition of salt to the food of animals does not increase the digestibility of the food consumed, but increases their appetite, and tends to promote repair of tissue by its searching diffusion through the body. Experiments by Boussingault showed that salt increases muscular vigour and activity among cattle, and improves their general appearance and condition. Where muscular strength is the object of feeding, a regular supply of salt improves health and vigour; thus it is that horses derive such benefit from partaking of it. The allowance of salt should not of course be overdone, as it will then throw too much work on the kidneys and even induce disease.

The difficulty in calf-rearing should be greatly minimised by the adoption of an arrangement such as is described below. A teat, about 4 in long, is fixed to one end of a bent tinned iron tube. The bucket containing the food is hung on a rail on the outside of the pen. A convenient hole is made through one of the boards of the rail into which the teat is fixed, the point projecting out on the inner side while the iron tube dips into the bucket. When the milk or other thinly-prepared food is put into the bucket the calf can only drink at a slow rate, giving time for the saliva to mix with and prepare the milk for digestion. In this way scouring and pot-bellies will be avoided. Teats, as described above, are supplied by Messrs. Clark & Co., Clarence St., Melbourne, at 1s. 8d. each.